

THE
Indian Medical Gazette

A MONTHLY JOURNAL OF

Medicine, Surgery, Public Health, and General Medical Intelligence
Indian and European

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VOL. XLVII

(Founded in 1865)

CALCUTTA
THACKER, SPINK & CO

1912

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"THE INDIAN MEDICAL GAZETTE"

VOL XLVII

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APPOINTMENT TO THE SERVICE EXAMINATIONS

By D G CRAWFORD,

LIEUT COL, I M S

FROM a very early date the East India Company ordered that applicants for appointments as Surgeon on board their ships should undergo an examination as to their fitness for the post. In Vol III, 1622-1624, of Sainsbury's *Calendar of State Papers, Colonial Series, India, China, and Japan*, several references to such examinations may be found, so early as 1622.

P 17, No 33, 25th February 1622, *Court Minutes of E I Co* "Edward Charley, Surgeon on the *Blessing*, displaced Richard Parkes, who has been Surgeon on five voyages, to take Charley's place."

P 18, No 38, 27th February 1622, *Court Minutes of E I Co* "Parkes, the Surgeon, examined in the presence of Dr Winston and Mr Fenton and others, found grossly ignorant and incompetent, and discharged. The order for displacing Charley countermanded. In future all Surgeons to be examined before engaged. Dr Winston offers his services for this purpose, free."

P 243, No 404, 3rd February 1624, *Court Minutes of E I Co* "To the motion that the Surgeons entertained be examined, it was answered that the Surgeons of this fleet are all experienced men, who have been in the Indies long, have performed extraordinary cures, and are men approved for their efficiency in their profession, and such as will scorn to be examined, therefore the opinion of the Court was that such Surgeons as come home well approved from the Indies and proceed again shall not be subject to examination, but if a new unknown man be propounded, then to have him examined."

Richard Parkes, however, had made five voyages before he was "examined and found grossly ignorant and incompetent." No doubt he also would have 'scorned to be examined' if he could have avoided the test. Probably others like him could have been found.

Most of the appointments as Surgeons to Indian men appear to have been made on the nomination of John Woodall, the E I Co's Surgeon-General in London. Many complaints were made of the incompetence of the men appointed. Woodall seems to have appointed his apprentices to serve on board ship at a nominal wage, while he himself, as their employer, drew the greater part of their pay in London. A letter from Richard Baker (1) dated Saldania (Saldanha Bay), 20th June 1615, reports—

"Mr Woodall's great abuses in the chirurgion's chest, putting divers boxes of one simple, whereas he writeth in their superscriptions to be diverse, drugs rotten, unguents made of kitchen stuff. Boys that have no skill thrust into place of chirurgions. He is to be accounted guilty of the death of so many men as perish through his default."

The "boys of no skill" were probably Woodall's apprentices, whose pay he drew. Similar complaints occur in Sainsbury's *Calendar*.

P 416, No 628, 1st October 1624, *Court Minutes of E I Co* "Information having been given that Mr

Woodall has shipped 12 servants into the Indies whose wages he is to receive, ordered that he be wained to attend the next court."

P 424, No 643, 13th October 1624, *Court Minutes of E I Co* "Examination of Woodall charged with seeking his own gain by thrusting his servants upon the company, he admits he has seven apprentices as Surgeon's Mates in the Indies, but has had 20, who are dead, that they are set out at his great charge, and the benefit he makes is but then two months pay yearly, and that such as live to return prove the ablest for that employment by reason of their practice, as will appear upon examination of skilful surgeons to whom he refers, with that his submitting trial the court was satisfied."

It has been stated that grossly incompetent men, with little or no medical education, were, from time to time, in the eighteenth century, appointed as medical officers to the Company's service in India. Surgeon-General W B Beaton, in his pamphlet on the Indian Medical Service, published in 1902 (2) states that about 1758, or perhaps later, an instance is recorded of a person who had been a butcher on board an Indiaman, being appointed as Surgeon, and that this individual was so grossly ignorant as to sign himself *Sergeant* instead of *Surgeon*. That such cases may have occurred is quite possible. But the words *Sergeant* and *Surgeon* are not unlike each other, both in spelling and pronunciation, and instances may be found in the records where one of these words has been misprinted or miscopied for the other.

It seems more likely that the ship's butcher was appointed *Sergeant* than *Surgeon*. A ship's butcher is hardly likely to have been able to get a nomination from Court, or even to have been locally appointed in India. Another possibility is, that an ex-medical student might have been serving on board ship in a menial capacity, and locally appointed in India, at a time of pressure, to the Medical Service.

In 1763-65 a considerable number of officers entered the company's army from King's regiments returning from India to Europe. Among them were several medical officers including—

A Sinclair, Surgeon, 89th Foot, Madras, 6 June, 1763
C L Lucas, Surgeon, 96th Foot, Madras, 9 January, 1764

W Raine Surgeon's Mate, 96th Foot, Madras, 23 February 1764

M Allen, Surgeon, 96th Foot, Bengal, 19 February, 1765

These officers retired on half-pay from the British Army, and of course drew full pay from the company. The Combitant officers mostly got a step on their transfer in addition, i.e., Lieutenants in the King's regiments entering the Company's Army as Captains. The medical officers were transferred with their rank as Surgeon or Surgeon's Mate.

Cases of appointment from the ranks to a commission in the I M S are not unknown. In the proceedings of the Central Medical Board of 21st November 1795, is a letter from Surgeon John Bugh, who was appointed Asst Surgeon in India on 20th December 1782, in which he states that he came out to India on the *Worcester*

Indiaman in 1782, not in a medical capacity, but as a volunteer (3) He served in the Carnatic, in the second Mysore war, and also in the second Maratha war in 1803-04, taking part in Monson's retreat, and was killed near Fatehpur Sikri on 29th August 1804 The remains of Monson's force reached Agia Fort on the following day, 30th August

Assistant-Surgeon John Smith Sloper, a St Thomas man, took the M R C S in 1809, enlisted as a Private in the Company's Artillery in 1814, and got a commission as Asst-Surgeon in 1815 He resigned on 6th February 1819 John Smyth enlisted as a Private in the Bengal Army in April 1817, having the degree of M D He officiated as Asst-Surgeon from 31st October 1818 to September 1820, got a commission as Asst-Surgeon from 21st February 1824, became Surgeon on 1st March 1838, and retired on 10th February 1847 While such an appointment, to a commission in the I M S, is hardly likely at the present day, little more than twenty years ago, a doctor, who had enlisted, and was serving in India in the ranks, was appointed to the Uncovenanted Medical Service.

An instance, however, is on record where a Surgeon in the service formally and deliberately made a similar charge, of the appointment to the service of unqualified and incompetent men In the Calcutta Press Lists (Vol 1775-1779, p 406) is quoted a memorial by Asst-Surgeon James Kerr (appointed 16th May 1770, Surgeon 25th April 1778, died in Calcutta, 17th September 1782), in which he states that he had seen a person serving as Head Surgeon in Bengal who could not have passed as a Surgeon's Mate at Surgeon's Hall, also that a black slave boy, named Nicholas, was appointed Asst-Surgeon on Rs 130 a month, while he (Kerr) served for seven years on Rs 120 Surgeon-General Daniel Campbell's remarks on this memorial are dated 15th May 1778 He states that he does not know who the Head Surgeon, thus referred to as incompetent, is, but that the black slave boy, Nicholas, was a dresser under Mr Anderson, one of the Medical officers killed in the Patna Massacre of 1763, for his services to the prisoners he was granted the *pry* and *batta* of an Assistant-Surgeon, but that his name was never on the list nor was he ever considered one of them

In 1773 the East India Company appointed a Board in London to examine candidates for appointments as Assistant-Surgeon The receipt of orders to this effect is noted in the Madras Press Lists of that year (4), the Court also say that it is desirable that all vacancies for Surgeons should be filled up by men licensed by this Board Exactly a year later, the same announcement is made at greater length (5) The actual order, contained in a letter from Court, dated 13th April 1774, to the President and Council of Fort St George, runs as follows —

Para 14 "It being of the greatest Importance to the Welfare of our Settlements in India, as well as the

Crews of our Ships, that they should be supplied with able and experienced Surgeons we have for a few years past established here a Board of Gentlemen of the Faculty, of known Ability in their Professions as well in Physic as Surgery for examining all the Surgeons appointed from hence either for our Settlements or Ships

Para 15 "And that our Service may be benefited as much as possible by this regulation we direct that when Vacancies of Surgeons happen in your Hospitals or in the Regiments, a Preference in the Choice of Successors be always given to such who have the Company's License for residing in India, and who have passed their Examination here by the Board abovementioned, and that if possible none other be employed by you And that you may never be in want of Persons properly qualified, you will advise us how many may be necessary to be sent to you every year"

About the same time, the necessity for examining men locally appointed in India became apparent In 1775 the Government of Madras directed Surgeons Pisley and Anderson, who were at this time acting practically though informally, as a Medical Board, to recommend to the Board persons qualified to be Surgeons' Assistants (6)

Madras Separate Letter of 9th December 1775, reports in paras 16 and 17 (7) —

"Surgeons and Surgeons' assistants, prior to their being admitted into the Service we have resolved for the good of our Hospitals shall be strictly examined by our Senior Surgeons at the Presidency and declared competent in the different Branches of their Professions Their Reports are to be entered on our Consultations"

In Bengal similar orders were formally passed in 1767 The Consultations of 29th April 1767 contain the following order —

"The Board, taking into Consideration how requisite it is that the Gentlemen of the Faculty, employed in the Hon'ble Company's Service should be well skilled in their profession Resolved that in future none shall be admitted into the Service as Surgeon's Mates without having previously passed an Examination before the four Head Surgeons of the Settlement"

The Minutes of the Bengal Council of 27th September 1784 (9) published as G O of 16th November 1784, order that all Assistant-Surgeons, whether sent out from home or locally appointed, should pass an Examination before a Committee of which the Surgeon-General was President, before admission to the Service

Minutes of Council, 27th September 1784 Resolved— "That all Assistant Surgeons who may hereafter be appointed by the Court of Directors, or admitted into the Service under this Presidency by the Board, be examined by a Committee (*sic*), consisting of the Surgeon General and two or more Surgeons of his Nomination, from the Civil or Military Surgeons doing duty at the Presidency, and that on passing such Examinations the Certificate of their Qualification, which they shall in consequence receive from the Surgeon General, be delivered, together, with their Credentials from the Court of Directors (if then Appointment is from them) to the Military Secretary, that the Persons so approved may be reported by him to the Board, receive their sanction for being confirmed in General Orders, and for being appointed to the Civil Hospital at the Presidency, or to the Military Department, according as their Services may be required"

The Examiners in Calcutta, on occasion, criticised those at home, but apparently did not venture to reject as unfit a man who had been passed in England, and appointed by the Court. A Military letter from Bengal, dated 27th April 1792, (10) makes the following remarks upon Assistant-Surgeon J Briars —

Para 84 "Mr Briars, Assistant-Surgeon Hospital Board observe this Gentleman must have been sent out without having been duly examined as to his qualifications, or that the examination must have been superficial"

Briars may have been duly qualified when examined in England, but was probably mentally deranged when examined in Calcutta, for he was undoubtedly insane a few weeks later. The Proceedings of the Calcutta Medical Board of 8th May 1792 contain a letter from Mr Boyd, Head Surgeon at Bazbampur, dated 13th April 1792, which is summarised as follows —

"Reports that Assistant Surgeon Briars has been disordered in mind ever since his arrival. His prescriptions cannot be made up. He prescribed Glauber's salt in quantities of one to ten ounces for a dose. Mr Haig has had to treat all his patients. He continues to go about in the sun all day, very Ragged and very Dirty, in object of great compassion to every one who beholds him"

The same Proceedings for 4th December 1793 note the receipt of a letter dated 25th June 1793, from the Court of Directors, Military Department, which states that John Briars had the usual certificates, including the certificate of the Corporation of Surgeons, June 1787. Probably he became insane during the long voyage to India.

Orders were passed that Mr Briars should be sent down to the Calcutta Insane Asylum. A Military letter from Fort William, dated 14th February 1794, reports in para 77 that

"Mr Briars, Assistant-Surgeon, still continues disordered in his mind and is at present confined in the Hospital for Insanes"

In the Army Lists in the *East India Register* Briars is shown as "Insane" up to 1804, his name is omitted in 1805.

In 1795 the Calcutta Medical Board instituted an inquiry into the medical qualifications of the numerous Assistant-Surgeons appointed locally in Bengal in 1782-83, and as to how and why they first came to India, the results of which appear in the Proceedings of the Board from October to December 1795. The majority had come out as Surgeons to Indiamen, several as Surgeon's Mates in the Royal Army or Navy, a few as passengers, a few as Combatant officers or cadets, though as a Volunteer. Only one, John Gilman, appears to have had no medical qualification. He had, however, been apprenticed to a Surgeon, and had attended classes at Barts. He came to India as a Cadet of the Bombay Infantry in April 1781, was sent to Madras in March 1782, and was there appointed an Assistant-Surgeon by the Com-

mander-in-Chief, Sir Byre Coote, from 6th April 1782. His want of qualification did not stand in the way of his promotion, for he rose in time to be second Member of the Medical Board. John Peter Wade had come out as Surgeon to a Portuguese ship, the *Arabida*, he had studied at Edinburgh, but his qualification was a license from the Queen and Minister of Portugal. Patrick Ivory, besides the certificate of the London College, was an M A and M D of Paris.

In Madras, as well as in Bengal, Assistant-Surgeons had been appointed locally in times of stress. In the M S Army Lists in the India Office, containing the histories of the Company's Medical Officers (11), among the entries about Nicol Mein, appointed Assistant-Surgeon on 20th July 1772, it is stated that two of the cadets sent out to Madras in 1772, Nicol Mein and John Simson, "had been regularly bred to Surgery," were found by the Surgeons well qualified, and were therefore appointed to be Surgeon's Assistants.

The *Calcutta Gazette* of 1st July 1790 publishes extracts from a Letter from Court, dated 2nd December 1789, giving a list of deserters from Indiamen, who had remained in India, and whom the Court ordered to be apprehended and sent back to Europe at once. The list is a very long one, and includes eleven medical officers. Out of the eleven, five had been duly appointed, locally, to the Medical Service in Madras. None of these five were sent home. One, Joseph Copeland, disappears from the list in 1793. A second, John King, was dismissed by Court-martial in 1803. The other three, Robert Galloway, David Halliburton, and John MacArthur, all died, while serving, between 1799 and 1803 (12).

A considerable number of local appointments were made to the Bombay Service also between 1788 and 1791. A Bombay Military Letter dated 24th December 1790 (13) states in para 10 —

"Have appointed no Surgeons ourselves, but have been obliged to entertain a few Assistant Surgeons provisionally, as your own Appointments had not been sufficient but shall employ them no longer than until you may supply us"

In spite of the last clause of the extract, all, or nearly all, of the Assistant-Surgeons thus appointed in Bombay, locally and temporarily, seem to have been confirmed on the permanent establishment, sooner or later.

In an article on the constitution of the Medical Department, published in the *India Journal of Medical and Physical Science, New Series*, Vol I, 1836, edited by Frederick Corbyn (pages 127 and 346), the writer, probably Corbyn, states that a diploma was first required in 1795. He does not give his authority for the statement. Most likely it was deduced from the inquiry, quoted above, made by the Calcutta Medical Board, in 1795, as to the qualifications of the men locally appointed in 1782-83. It seems probable that some sort of diploma or qualification

had been required since 1764, although in some of the cases of local appointment, in time of emergency, the necessity of possessing a diploma had not been, and could not be, enforced.

In the Proceedings of the Calcutta Medical Board of 18th December 1794, is quoted a letter from Court, dated 11th June 1794, appointing Francis Buchanan, now in India (he had come out as Surgeon to an Indian), an Assistant-Surgeon, if found qualified. He was accordingly examined by the Board and passed. He attained distinction in the service at a later date, chiefly by his journeys and surveys in Mysore and Bengal.

The Assistant-Surgeons appointed from England received and executed regular covenants. In the Calcutta Press Lists of 1784, is mentioned a letter of 23rd July 1784, from Surgeon-General James Ellis to the Government, forwarding the covenants of Assistant-Surgeons Smith, Cairns, Coise and Macleod, four of the Assistant-Surgeons appointed in England in 1783 (14).

The Proceedings of the Calcutta Medical Board of 14th November 1791 contain the following letter from Government to the Medical Board, forwarding such covenants for execution —

"To A. Campbell, Secretary, Medical Board — Sir, I am directed by the Governor General in Council to transmit to you the covenants of Messrs J. W. Smith, Adam Mitchell, and Charles Campbell, who have been appointed Assistant Surgeons on this Establishment, and to desire that they may be executed by the parties before the Hospital Board and then returned for the purpose of being forwarded to England. — I am, Sir, J. Fombelle, Sub Secretary, Military Department, Council Chambers, 5th October 1791."

The appointment of Natives of India as commissioned officers in the Medical Service was strictly forbidden by the Court, and it was not until the introduction of competitive examination in 1855 that admission was thrown open to natives. Still, in spite of orders against their admission, a few men, who were officially called natives of India, were from time to time appointed. As all these men, however, bore European names, it seems probable that they were either country-born Europeans or Eurasians. From the order appointing Assistant-Surgeon J. G. Vos, in 1832, it appears that the definition of a "Native" then employed was the "son of parents of whom either one or both were of pure unmixed native extraction."

In Volume 2 A of the Cadet Registers (17 M S Volumes) appears the name of Richard Samuel Richardson, with the following note —

"Standing orders of Company respecting Natives of India dispensed with in favour of Mr. Richardson, the 1st February 1792."

Richardson's first commission bears date 19th September 1792. He rose to be Surgeon, and died at Barrackpore on 24th November 1818.

In their Proceedings of 14th July 1797, the Calcutta Medical Board recommend James Lumsdaine, "a native, but well qualified," for appointment as temporary Assistant-Surgeon in an expedition to the East, and he was appointed

from 17th July. This expedition never took place, but Lumsdaine was appointed Acting Assistant-Surgeon for Bencoolen in Proceedings of 9th November 1797. He was confirmed in the Bengal Service from 9th September 1799, became full Surgeon, and retired on 5th July 1825.

A letter from Court dated 12th February 1806, published in the *Calcutta Gazette* of 31st July 1806, appoints William Noyes to be Assistant-Surgeon, subject to his passing an examination, and not being a native of India.

"We have appointed Mr. William Noyes, now Surgeon of the *William Pitt*, an Assistant Surgeon on your Establishment, provided he shall appear on examination by your Medical Board to be qualified for that station, and that the Governor General in Council shall be satisfied that he is not the son of a native Indian. His order of rank will be transmitted to you on a future opportunity."

Noyes had but a brief career in India. He was appointed Surgeon to the commercial Residency at Radnagore (Radhnagari in Midnapur), and died there the following year, on 18th November 1807.

In volume 25 of the books of Assistant-Surgeons' certificates occurs the following order appointing J. G. Vos an Assistant-Surgeon in 1832, which gives the conditions then laid down as necessary for appointment to the I. M. S. Vos was commissioned from 16th September 1832, became full Surgeon, retired on 15th October 1850, and died at Southampton on 28th April 1860.

"We have appointed Mr. James Gregory Vos, M.D., now at your Presidency an Assistant Surgeon upon your Establishment, provided he is not the son of parents of whom either one or both are of pure unmixed native extraction, that he is not under 22 years of age, or exceptionable in any other respect, subject also to his being first examined and found qualified for the profession by your Medical Board. Upon the conditions before stated we direct you to admit him an Assistant-Surgeon, and administer to him the usual oath of fidelity to the Company. Mr. Vos' order of rank will be transmitted at a future date. [Approved, Committee for passing military appointments, 15th August 1832, Bengal Military J]"

G. O. No. 47, dated 22nd March 1830, published in the *Calcutta Gazette* of 29th March 1830, notifies, in exactly the same wording, the appointment of Assistant-Surgeon James Harvey, who was actually ranked from 2nd October 1829. Several other similar cases are notified from time to time.

Cadets were sometimes appointed to the Indian Army in the same manner, young men who were in India at the time of their appointment. One such case may be seen in G. O. of 22nd November 1830, published in the *Calcutta Gazette* of 29th November 1830, appointing Mr. Josias Dupre Ferguson a Cadet of Infantry in Bengal. *Mutatis mutandis*, the wording of the order is exactly the same as for the Assistant-Surgeons.

It was not until 1854 that British nationality was made a condition of appointment, using the word British in the widest sense. The first of

the rules for competition, published in 1854, throws open appointments to "all natural-born subjects for Her Majesty," and to them only. Many foreigners have served in the I M S prior to that date. Ephraim Morison (Madras, 1st October 1790), and Josiah Hailin (Bengal, 1st July 1824 to 1827), were Americans, citizens of the United States (15). Theodore Cantor, (Bengal 1839) was a Dane, Aloys Sprenger, the famous Oriental scholar, (Bengal 1843), was a Swiss.

The Court of Directors, however, while not requiring their medical officers to be British subjects, apparently insisted that they should be Protestants by religion, in the case of foreigners, at any rate. A military letter from Bombay, dated 24th December 1790, has the following reference, in para 36, to a Catholic Assistant-Surgeon (16) —

"Medical Board, to whom your orders were referred, reporting that Mr Pouget was a foreigner and a Roman Catholic, we declined admitting his pretensions, but as he has served 12 years, and was at one time placed upon the list of Surgeons though irregularly appointed, we have allowed him the Pay of that rank, and fixed him at Surat as Hospital Mate."

Joseph Pouget, the officer here mentioned, was appointed to the Bombay Service as Assistant-Surgeon on 10th September 1778, and, in spite of the above remarks, served for thirty years, retiring on 19th October 1808. He does not seem ever to have been promoted to Surgeon, but a Bombay Military letter of 25th February 1807, in paras 124, 125, reports that he has been granted furlough to Europe, and recommends him for the pension of a Senior Surgeon on retirement (17). He died at Florence on 25th July 1833, having drawn his pension for nearly twenty-five years.

By the India Act of 1853, Acts XVI and XVII, Vict., cap 95, admission to the I M S was ordered in future to be made by competitive examination only, and was thrown open to "all natural-born subjects of Her Majesty," as stated above.

The first competitive examination was held in January 1855, when the list of successful candidates was headed by S C G Chuckerbutty, one of the Bengali students who had gone to England with Goodeve ten years before, and who had served as an Uncovenanted Medical Officer in Bengal from 1850 to 1854.

Since then a large number of natives of India have entered the service by competition, and most of them have served with credit and success. Dr Chuckerbutty and Dr Chandia filled in succession the post of Professor of Materia Medica in the Calcutta Medical College, along with that of Second Physician to the Medical College Hospital, and both were successful as Teachers and as Physicians.

The number of natives of India, counting those only with pure native names, who have entered

the I M S from January 1855 to the end of 1910 has been 89 (18)

Bengal	24
Madras	11
Bombay	15
Junior I M S	39

In addition to the Assistant-Surgeons, or Surgeon's Mates, appointed to the service in England, other young qualified men were from time to time permitted to go out to practice in India, with the expectation of getting into the establishment by local appointment. The Company did not encourage men to go out on speculation without permission. A letter to Fort St. George in 1779 (19) advises departure of Mr Thomas Henry Davies to practice in Bengal without the Company's leave, and asks the Madras Government to send him back to England if he is found there. What became of this interloping doctor is not stated. Thomas Hart Davies was appointed to the Madras Service in 1790, but this can hardly be the same man seventeen years later.

The admission of a large number of Assistant-Surgeons in 1782-83 to the Bengal Medical Service, and the long discussions over the respective rank of the men appointed from home and of those locally admitted, a dispute which lasted for some sixteen years, has already been mentioned (20). The number of men locally appointed during the next thirty years was not large. Still the Government of India found it necessary, from time to time, when short-handed, to make a few such appointments.

That of Lumsdaine in 1797-99 has been quoted. The Proceedings of the Calcutta Medical Board of 9th January 1798 notes the recommendation for temporary employment as Assistant-Surgeon at Dikka of William Tutin, a resident there, who had come out as Surgeon to an Indiaman. The appointment was sanctioned by Government. And in 1801 two doctors who are spoken of as residents of Calcutta, J Hare, junior, and B Reilly, were temporarily appointed. On 31st July 1794 Thomas Lyon petitions the Calcutta Medical Board, saying that he had been taken prisoner in the Indiaman *Pigot* on 7th February of that year, that he had lost the savings of nine years' service in the Company's ships and that he had been a prisoner of war for three months, and asks to be appointed an Assistant-Surgeon in Bengal. The Medical Board recommended his appointment to the Bengal Government, which at first refused to make the appointment, but a week later agreed to do so (21). All four of these officers were eventually confirmed in the service. Lyon was killed in the battle of Deig, in Bhampur State, on 13th November 1804.

Numerous temporary local appointments were made to the Bengal Service in 1816 to 1819, at the time of the third Maratha war, and in 1824-25, for the first Burmese war. On both these occasions the Court insisted on the removal from

the service of all the temporary Assistant-Surgeons, when the need for their services was over. On each occasion about one-half of the temporary men were successful in getting nominations to the service in the regular way, and the rest were struck off.

The sale or purchase of appointments as Cadet or Assistant-Surgeon was absolutely forbidden. If detected, the purchaser of a commission was liable to dismissal. No case seems to be on record in which an Assistant-Surgeon was actually dismissed for having procured his admission by purchase. It is not likely that such sale or purchase was at all common. The nominations to both Cadetships and medical appointments were in the hands of the Directors of the Company, most of whom were wealthy men. The power of nominating to commissions in the Indian Army was a valuable piece of patronage, the holder of which was able to oblige his friends, or those from whom he in turn hoped for favours, by providing a start in life for their sons, or the sons of their friends. The exchange of nominations was common, i.e., a Director who wished to nominate a man to the Bengal Medical Service might not have a nomination for that service at his disposal at the time, but might have a nomination for some other branch of the service, say for instance for the Madras Cavalry, which he did not want, and would hand over to another Director in exchange for the nomination he required. But the actual sale of nominations must have been rare. What was feared, rather than actual sale, was brokerage, or the offer to influence others who had such appointments in their gift.

That it was believed that nominations could be bought, is clearly shewn by the following advertisement, published in the *Times* of 6th March 1806, and reproduced in the issue of 7th March 1907—

"FIFTY POUNDS may be had by procuring the Advertiser an ASSISTANT SURGEONCY in the East India Company's service. Address (postpaid) to A. M., at Peele's Coffee-house."

The sale, purchase, or brokerage of appointments in the Army, Navy, or other branches of the public service, including that of the East India Company, was made a penal offence in 1809, by Act 49, George III, cap 126. A resolution of the Court of Directors, dated 9th August 1809, declared that the purchase of an appointment in the Company's service should entail the dismissal of the offender. This resolution is published in the *East India Register* of 1827—

"Resolution of Court of Directors, 9th August 1809, to prevent the purchase of appointments. That any person who shall, in future, be nominated to a situation, either civil or military, in the service of the Company, and who shall have obtained such nomination in consequence of purchase, or agreement to purchase, or of any corrupt pretence whatever, either direct or indirect, by himself or by any other person, with or without his privity, shall be rejected from the service of the Company, and ordered back to England, if he shall have

proceeded to India before a discovery of such corrupt practice be made and if such situation shall have been so corruptly procured by himself, or with his privity, he shall be rendered incapable of holding that, or any other situation whatever, in the said service. Provided always, that if a full disclosure of any corrupt transaction or practice of the nature before described, wherein any Director has been concerned, shall be voluntarily made by the party or parties engaged in the same with such Director, the appointment thereby procured shall be confirmed by the Court."

In 1807, objections were made to Medical Officers of the Company leaving their service to join the King's Army. A Military letter from Madras, dated 6th March 1807, reports in para 369 that Assistant-Surgeon Piper has been discharged, having entered the King's service and goes on to state that a rule has been made that, for the future, no Medical Officer will be permitted to retire from the Company's service without returning to England (22). This rule does not seem ever to have been enforced.

Later in the same year, another Madras Military letter of 21st October 1807 states in para 764, that in future Assistant-Surgeons will be attached to a certain extent, at first, to King's regiments, to extend their medical knowledge (23).

The following appointment letter of Assistant-Surgeon J. F. Beiger, dated 18th January 1814, is given as a specimen of the manner in which a number of men then joined the service. It is a sample of many, and shows how young medical men were allowed to go out to India to practice their profession, while waiting to succeed to vacancies as they might arise. Apparently they were not entitled to any pay until formally appointed to fill a vacancy. But, as a rule, on arrival they would find several vacancies due to deaths or retirements which had arisen since their nomination, and would not have long to wait before they obtained a footing on the establishment.

"Pursuant to reference of Court of 12th instant, the Committee have taken into consideration the petition of Mr. John Francis Beiger, for leave to proceed to India as an Assistant Surgeon, and Mr. Beiger having produced the necessary testimonials of his qualification for that station are of opinion, he be permitted to proceed to Bengal to practice in the luc of his profession and to succeed to the post of Assistant Surgeon and that his rank be settled at a future time" (Recommended by James Pattison, Esq.)

In the original letter, Bengal is written, and struck out, Madras being written above. Beiger, as a matter of fact, never joined the service at all. He may have been a foreigner, as he says in his application for an appointment (Assistant-Surgeons' Certificates, Vol. IX), that he was born at Geneva on 26th June 1778. He was therefore thirty-five at the time of his appointment to the I. M. S. He seems to have previously served in the A. M. D., as he speaks of receiving his certificates from the War Office.

The London College of Surgeons (24) used to grant, from 1745 up to 1800, an inferior diploma, or certificate, by which the applicant was certified

as qualified for appointment as Hospital mate or Surgeon's mate in the Navy or Army, or to an Indianman, or as Assistant-Surgeon to an Indian Presidency. From 1800 to 1822 they granted, in addition to the diploma of M R C S, a second diploma as Licentiate. The following diploma granted to Assistant-Surgeon James Mann, though dated 1811, appears to be a specimen of the earlier certificate. It occurs in the volume of Assistant-Surgeons' Certificates for 1811, and is a specimen of many. In the original the words shewn in brackets, including, of course, the signatures, are in writing, the rest of the document in copper-plate print.

'To the Clerk to the Committee of Shipping of the Hon'ble United East India Company. Sir,—We have examined Mr (James Mann) and find him qualified to serve as Assistant Surgeon at any of the East India Company's Presidencies in the East Indies."

We are, Sir,

College of Surgeons (15th February) 18 (11)	Charles Blucke	} Master
	David Dundas	
	Thompson Foister	} Governors
	C Hawkins	
	J Earle	} Examiners
	C Chandler	
	J Keate	
	Everard Home	
	William Blizzard	
	Henry Olive	

In a few cases, members of the Sub-Medical Department have been promoted to commissioned rank. Daniel Fallon was appointed a Sub-Assistant-Surgeon in Bombay on 16th January 1817. He was promoted for good service in the field at Alashkara in Arabia, in November 1820, when his immediate superior officer, Surgeon George Whigham, was killed in action. He was appointed Assistant-Surgeon, Bombay, from 27th January 1821, but without claim to future promotion. Possibly this bar to his rising in the service might have been removed, had he lived long enough, but he died of cholera at Panwell, Bombay, on 9th April 1828, before his turn for promotion had arrived. John Bowion was born on February 1799, entered the Bengal Sub-Medical Department as a medical pupil on 1st July 1813, became Apothecary on 7th September 1816, got a commission as Assistant-Surgeon, Bengal, from 20th December 1825, became Surgeon on 16th December 1840, retired on 31st December 1851, and died at Hove on 5th March 1899, aged 100, having lived to a greater age than any other officer who ever served in the I M S. William Leggatt was appointed Sub-Assistant-Surgeon, Bombay, in February 1823, served in the First Burmese War in that capacity on the cruiser *Teignmouth*, was appointed an acting Assistant-Surgeon in March 1827, and confirmed in that rank from 3rd January 1828. He became Surgeon on 9th January 1843, and died on 16th May 1854. Thomas Piendergast, an Apothecary in the Madras Establishment, was nominated Assistant-Surgeon on 17th January 1830. Having declined to appear for examination before the Madras Medical Board, he was granted sick leave to England to prosecute further medical study, but not having succeeded in qualifying, his

appointment was revoked, and he was reappointed Apothecary.

Since admission to the service was thrown open to competition, a large number of members of the Sub-Medical Department have succeeded in gaining commissions by examination (25).

During the last twenty-five years of the nomination system, commissions as Assistant-Surgeons in the I M S were several times given by Directors of the Company as prizes at various Medical Schools. In 1832 the student recommended by London University was nominated by Sir R Campbell, but this appointment hardly proved a success, as W D Nash, who was thus appointed, resigned, after a few years service, on 14th June 1838. In 1842 and 1849 nominations were given by Sir J Lushington to the London College of Surgeons, also one in 1847 by the Court of Directors. At least eight other nominations were given by different Directors, from 1852 to 1855, as prizes for competition at Medical Schools. A list of these prizemen is given below —

Date of commission	Name	Medical School	Director nominating
18 Sept 1842	W Crozier	Nominated by Council R C S (Bart's)	Sir J Lushington
19 June 1847	J Williams	Ditto	Court of Directors
4 Feb 1849	G Hansbrow	Ditto	Sir J Lushington
30 June 1852	W B Beatson	Guy's	J Masterman
20 Apr 1853	T J Duthroit	Bart's	Ditto
18 June 1853	F N Macna mara	King's College	W A C Plowden
20 Oct 1853	A J Dale	London Hosp	R Ellis
20 Oct 1853	A Sanderson	Aberdeen	Col J Sykes
30 Dec 1854	J C Annesley	St George's	R D Mangles
14 Jan 1855	R H Battram	Guy's	J Masterman
9 Jan 1856	J H Thornton	King's College	W H L Melville

Most of the officers thus nominated fairly justified their early success. Two fell in the Mutiny, Hansbrow, murdered at Bareilly, and Battram, killed in the relief of Lucknow. Four, Beatson, Dale, Sanderson, and Thornton, rose to the rank of Deputy Surgeon-General, Thornton also being decorated with the K C B. Duthroit died at five, Crozier at twenty years service. Williams, Annesley, and Macnamara, retired with between twenty and twenty-five years service, the last had held the Professorship of Chemistry in Calcutta for over twenty years. Sanderson was appointed to the Madras Service, all the others to Bengal.

Age on admission—The first introduction of any age limit on admission appears to have been about 1821. The regulations for admission published in the *East India Register* of 1822 state that the newly appointed Assistant-Surgeon must not be under twenty years of age. In 1835 the age for admission was raised to twenty-two, at which age it remained until January 1887, when it was lowered to twenty-one.

Previous to 1855, no maximum age limit existed. On many occasions men were appointed

at ages which seem to us nowadays absurdly high. Lewis Blohme, appointed Assistant-Surgeon on 6th July 1772, four years later, on 19th December 1776, resigned on account of age and infirmities, and was pensioned on Lord Clive's fund. Fort William General letter of 19th December 1776 reports in para 12 —

"Dr Lewis Blohme, late a Surgeon on that Establishment, permitted to resign on account of his age and long illness. Have granted him certificates to obtain a pension."

In the volume of Assistant-Surgeons' certificates for 1811 George Hewetson, appointed to Madras on 28th July 1811, swears to his age as 49 years 6 months, on 17th April 1811. Joseph Muechanx, appointed to Bengal on 31st July 1812, was born on 26th August 1764, consequently was within a month of 48 on first appointment. Hewetson died at Vellore on 9th August 1824, Marechaux was drowned on 5th December 1814, so neither of them lived long enough to earn a pension.

Even so late as 1853, such appointments seem to have been occasionally made. The *Lancet* of 9th July 1853 contains a letter on the grievances of the I. M. S., in which the writer complains of old and sometimes unqualified men being appointed to the service. The reference in this case is probably to R. C. Knight, who was appointed Assistant-Surgeon in Bengal on 4th February 1853. Neither his age nor his qualification, if any, are recorded, but he had served as an Acting Assistant-Surgeon in Bombay in 1840-41, and as an Uncovenanted Medical Officer in 1850-52, so must have been much older than most of the men joining. Other Assistant-Surgeons appointed in 1853 at ages higher than usual were Peter O'Brien and Arthur Young. O'Brien was born on 19th November 1806, and appointed Assistant-Surgeon on 20th November 1853, at the age of 47. He had, however, served for nine years in the Gwalior Contingent as an Uncovenanted Medical Officer, and was by no means unqualified, as he had obtained the diploma of M. R. C. S. in 1843, before his first appointment, was also M. D. of Calcutta, and took the F. R. C. S. England later, in 1859. Young was born on 21st December 1816, officiated as Assistant-Surgeon in Bombay from 5th December 1846, subsequently serving as an Uncovenanted Medical Officer in Sind, before he obtained a commission as Assistant-Surgeon, Bengal, on 20th October 1853, when he was nearly 37.

Knight died at Bijnor on 14th June 1860, but both O'Brien and Young lived to retire on pension, Young surviving up to 27th March 1906.

The admission regulations of 1855 fix the age for admission as 22 to 28, and these age-limits have remained in force ever since, except that the minimum age was lowered to 21 in January 1887.

In the *East India Register* of 1822 appear for the first time regulations for the admission of Assistant-Surgeons, as follows —

Age—Not to be under twenty years, in proof of which he must produce an extract from the Register of the Parish in which he was born, or his own affidavit.

Qualification—A Diploma from the Royal College of Surgeons of London, or of the Colleges of Surgeons of Dublin or Edinburgh, or of the College and University of Glasgow, (26) or the Faculty of Physicians and Surgeons of Glasgow, is deemed satisfactory as to his knowledge of Surgery. The above testimonials must be produced upon his receiving his nomination from a member of the Court of Directors. The Assistant Surgeon will then be sent to Dr Chambers the Company's Examining Physician, with the undermentioned letter.

"Sir —I have the commands of the Committee for passing Military appointments, to request you will please to examine Mr. — and certify whether he is now qualified in physic to serve as an Assistant Surgeon at any of the Company's Presidencies in the East Indies, and if not, at what period you think he may be sufficiently qualified to obtain your certificate."

The following regulations have been resolved on by the Court in reference to the examination by Dr Chambers.

"That every person nominated an Assistant Surgeon be required to pass an examination in the practice of physic in which examination will be included as much anatomy and physiology as is necessary for understanding the causes and treatment of internal diseases as well as the art of prescribing and compounding medicines."

"That upon the Assistant Surgeon presenting himself to Dr Chambers, he be required to produce to him satisfactory proof of his having attended one course of lectures on the practice of physic, and above all, of his having attended diligently the practice of the Physicians at some General Hospital in London, Edinburgh, Dublin, or Glasgow, for at least six months, and that unless he produce such proof, it be deemed a want of proper qualification, and be immediately reported as such by the Examining Physician, to the Committee for passing Military appointments."

"The Assistant Surgeon will likewise be required to attend one course of Dr Gilchrist's lectures in Hindoo medicine, for admission to which he will have to pay not more than three Guineas, and previous to his passing the Committee, he will be required to produce Dr Gilchrist's certificate of his having so attended. Dr Gilchrist's residence, 15, Arlington Street, Piccadilly."

"The Assistant Surgeon will finally be required to execute covenants in the Secretary's office, and find security in two persons to the extent of £500, jointly and severally, for the due performance of those covenants. *Stamps and Fees, £15 15s 6d*."

Passage Money If the Assistant Surgeon should proceed in one of the Company's ships, he will have to pay £95 for his accommodation at the Captain's Table, or £55 for his accommodation at the Third Mate's Mess, and his passage money must be lodged in the hands of the Company's Paymaster, for the said Captain or Third Mate."

Between 1822 and 1855 the following additions to and alterations in these rules appear in the successive half-yearly issues of the *East India Register*.

In 1825 "At a Court of Directors held on Friday the 27th February 1818—Resolved that Cadets and Assistant Surgeons be in future ranked according to the seniority of the Directors nominating them, from the date of sailing of the several ships from Gravesend (whether the Company's or Private Traders) by Lloyd's list, and

that those who may embark at any of the outposts be likewise ranked upon the same principle from the date of the ship's departure from such outpost by Lloyd's list."

In 1828 "The Assistant Surgeon will likewise be required to take a copy of the work published by Mr. Annesley, entitled '*Sketches of the most prevalent Diseases of India*,' and will then receive a certificate of his appointment, signed by the Secretary, for which he will be required to pay a fee of £5 in the Secretary's office."

The clause regarding the execution of a covenant for £500 is omitted in 1825.

In 1834 the clause requiring him to take a copy of Annesley's work is omitted, and three new clauses entered.

"The Assistant-Surgeon is also required, as a condition to his appointment, to subscribe to the military or medical fund at his respective presidency."

"The Assistant Surgeon is required, by resolution of Court of the 21st of May 1828, to apply at the Cadet office for his orders for embarkation, and actually proceed under such orders within three months from the date of being passed and sworn before the Military Committee, he will then be furnished with an order to obtain the certificate of his appointment, signed by the Secretary, for which he will pay a fee of £5 in the Secretary's office."

"At a Court of Directors held 21st May 1823—Resolved that all the Cavalry and Infantry Cadets and Assistant-Surgeons who shall fail to apply at the Cadet office for their orders for embarkation within three months from the date of their being passed and sworn before the Committee, or shall not actually proceed under such orders, be considered as having forfeited their appointments, unless special circumstances shall justify the Court's departure from this regulation."

In 1836 the qualification in medicine is stated as follows in addition to attendance on lectures —

"Above all that he should produce a certificate of having attended diligently the practice of the Physicians at some general hospital in London for six months, or at some dispensary in London for twelve months, or at some general hospital in the country (within the United Kingdom) for six months, provided such provincial Hospital contain at least, on an average, one hundred in patients, and have attached to it a regular establishment of Physicians as well as Surgeons."

In 1836 the age of admission was also raised to twenty-two.

In 1838 the clause "or at some dispensary in London" is omitted, and the following sentence added — "No attendance on the practice of a Physician at any Dispensary will be admitted."

In 1842 is added a clause to the effect that subscription to the Military Orphan Society is compulsory on Assistant-Surgeons appointed to Bengal.

In 1843 the following paragraph is added to the qualification required in Surgery —

"He is also required to produce a certificate from the Cupper of a Public Hospital in London, of having acquired, and being capable of practising with proper dexterity, the art of cupping."

In 1848 the following addition is made about qualification in Surgery —

"The Assistant Surgeon, upon receiving a nomination, will be furnished with a letter to the Court of Examiners of the Royal College of Surgeons, to be examined in Surgery, and their certificate will be deemed a satisfactory testimonial of his qualification."

The rules then go on to say, as before, that a diploma from Glasgow University, or from one of the Colleges of Surgeons, will be accepted.

In 1852 the following is added to the end of the paragraph on "Qualification in Physics" —

"It is also expected that the Assistant Surgeon will produce a certificate of having diligently attended, for at least three months, the practical instruction given at one of the Asylums for the treatment of the Insane, and at one of the Institutions or Wards of a hospital especially dedicated to the treatment of Ophthalmic disease. He will also be required to attend a course of lectures on the principles and practice of Military Surgery, if such a course shall be given at the place at which he has been educated" (27).

The Regulations passed for the first competitive examination, in January 1855, are contained in the *East India Register* for that year, and are as follows —

"All natural born subjects of Her Majesty may be candidates for admission into the service of the East India Company as Assistant Surgeons. They must, however, be between twenty-two and twenty-eight years of age, and of sound bodily health."

"They must subscribe and send in to Dr. Scott, Physician to the East India Company, before the 10th day of December 1854, a declaration to the following effect —

"I (Christian and surname at full length) a candidate for employment as an Assistant Surgeon in the service of the East India Company, do hereby declare that I was — years of age on the — day of — last, and that I labour under no constitutional disease or physical disability that can interfere with the due discharge of the duties of a medical officer, and I also attest my readiness to proceed on duty to India within three months of receiving my appointment."

"This declaration must be accompanied by the following documents —

1 "Proof of age, either by extract from the register of the parish in which the candidate was born, or by his own declaration, pursuant to the Act, 5 and 6 William IV, cap 62."

2 "A diploma in surgery, or a degree in medicine, provided that an examination in surgery be required for such degree, from some body competent by law to grant or confer such diploma or degree."

3 "A certificate of having attended two courses of lectures of six months each, on the practice of physics and of having attended for six months the practice and clinical instruction of the Physicians at some Hospital, containing at least, on an average, one hundred in patients, or of having attended one course of lectures, of six months, on the practice of physics, and clinical instruction for twelve months."

4 "A certificate of having attended for three months the practical instruction given at one of the public Asylums for the treatment of the Insane."

5 "A certificate of having attended for three months one of the institutions or wards of a Hospital especially devoted to the treatment of ophthalmic disease."

6 "A certificate of having attended a course of lectures on midwifery, and of having conducted, at least, six labours."

7 "A certificate of having acquired a practical knowledge of cupping."

"Candidates may also, at their option, send in certificates of attendance at any Hospitals, or at any course of lectures in addition to the above. Attendance on a course of military surgery is recommended."

"Candidates producing satisfactory certificates will be admitted to an examination to be held in January 1855."

"The examination will include the following subjects —

1 "Surgery in all its departments"

2 "Medicine, including the diseases of women and children, therapeutics, pharmacy, and hygiene

3 "Anatomy and physiology, including comparative anatomy

4 "Natural history, including botany and zoology

'The examination will be conducted—

1 "By means of written questions and answers

2 "By object examinations and experiments, when the subject admits of such tests

3 "By practical examination at the bedside of the patient, and by dissections and operations on the dead body

4 "By *viva voce* examination

"The persons who shall be pronounced by the examiners best qualified in all respects shall be appointed to fill the requisite number of appointments as Assistant Surgeons in the East India Company's service

"All Assistant Surgeons are required to subscribe to the military or medical, and medical retiring funds, at the Presidencies to which they may be respectively appointed, and to the Military Orphan Society also if appointed to Bengal

"All Assistant Surgeons who shall neglect or refuse to proceed to India under the orders of the Court of Directors, within three months from the date of their appointment, will be considered as having forfeited them, unless special circumstances shall justify a departure from this regulation

"Candidates may apply to Dr. Scott, 13, Stratton Street, for further information, if needed

"*A B*—The certificates and notices as to examinations herein contained apply only to the examination to be held in January next. Regulations regarding the requirements of and dates for future examinations will be issued after the first examination

"Candidates who may not have been able to attend the practice of an asylum for the insane or of an ophthalmic hospital, for three months previous to their offering themselves for examination in January 1855 will not be excluded from examination, but will, if successful in obtaining recommendation for appointments, be required to produce certificates of having attended such practice during the interval between the examination and the time of proceeding to India

"The Board of Examiners of Candidates for the appointments of Assistant Surgeon in the East India Company's service give notice that, on the 8th January 1855, they will hold examinations at the East India House, for the selection of Assistant Surgeons. The selection will be made according to merit, and it is expected that about thirty appointments will be awarded"

In spite of the notice given that the above regulations were intended to apply only to the first competitive examination, very little change was made during the next five years. In 1856 the practical study of surgical operations on the dead body was recommended, and the following clauses added to the regulations, the first following the rule for proof of age required—

"A certificate of moral character from a Magistrate or a Minister of the religious denomination to which the candidate belongs who has personally known him for at least two preceding years

"The persons who shall be pronounced by the examiners to be the best qualified in all respects will be appointed to fill the requisite number of appointments in the East India Company's service, and so far as the requirements of the service will permit, they will have the choice of the Presidency in India to which they shall

be appointed, according to the order of merit in which they stand on the list resulting from such examination

A copy of these regulations and any further information may be obtained on application to the Secretary of the Military Department East India House

"The examinations will take place in the months of January and July in each year, and due notice will be given by public advertisement of the days appointed and of the probable number of candidates to be selected"

(To be continued)

REFERENCES

- (1) "Letters received by the East India Company from its servants in the East, edited by F. C. Danvers and W. Foster Six volumes 1896—1902. Baker's letter is in Vol II, p. 181
- (2) *The Indian Medical Service, Past and Present* Reprinted from the Asiatic Quarterly Review, 1902
- (3) Volunteering was at this time a recognised road to a commission in the army. The volunteer served as a private, on the understanding that he would receive a commission on the occurrence of a vacancy
- (4) M. P. L., 1773 No. 7212 of 13th April 1773, Public Despatches from England Vol LXXXVII pp. 75-92
- (5) M. P. L., 1774, No. 9218 of 13th April 1774, Military Despatches from England Vol VII pp. 54-72
- (6) M. P. L., 1775, 992 of 25th July 1775, Miscell. Vol III p. 53
- (7) Abstracts of Letters received from Madras, Vol II, 1773-1784. Also M. P. L. 1775 No. 1335 of 23rd October 1775, Misc. Cons. Vol LIII pp. 1425-1433
- (8) Abstracts, letters from Bengal, Vol III, 1774—1783, p. 280
- (9) C. P. L. 1784 No. 1183 of 27th September 1784, O. C. No. 3a of 27th September 1784. Also Fort William, Misc. Cons. and G. O. 16th Nov. 1784
- (10) Abstracts, Letters from Bengal, Vol V, 1789—1795, p. 204
- (11) Service Army Lists Medical, 11 volumes, five Bengal, three Madras three Bombay. Of the five Bengal volumes two contain the histories, up to date, of officers serving in 1858, three those of officers dead or retired by that time. The appointment of Cadets Nicol Mein and John Simson is also mentioned in Madras Separate Letter of 15th October 1772, para 80
- (12) This list is quoted in Seton Karr's "Selections from the Calcutta Gazette," Vol II, pp. 23, 24
- (13) Abstracts, Letters from Bombay, Vol V, 1785-1799 p. 144
- (14) C. P. L. of 1784, p. 1146, O. C. 26th July 1784 No. 10
- (15) For the strange career of Josiah Harlan Assistant Surgeon General and Governor, see Chap. on "Doctors as Civil and Political Officers"
- (16) Abstracts, Letters from Bombay, Vol V, 1785-1799, p. 145
- (17) *Ibid* Vol VI, 1799-1807 (partly unpagged)
- (18) Portuguese and Armenian names are not included
- (19) M. P. L. of 1779, No. 865 of 27th May 1779, Military Despatch from England Vol X pp. 132-146
- (20) See Chapter "Strength from time to time," Also articles in *Indian Medical Gazette*, June to November 1909
- (21) Proceedings, Calcutta Medical Board, 4th August and 5th September 1794
- (22) Abstracts, Letters from Madras, Vol IX, 1806—1812, (unpagged)
- (23) *Ibid*
- (24) The London College has gone through the following forms, 'Corporation of Barber Surgeons (1540—1745), Corporation of Surgeons London (1745—1800), Royal College of Surgeons London (1800—1822), Royal College of Surgeons, England from 1822. They have given, from time to time, the following diplomas M. R. C. S. (Corporation) 1540—1600, M. R. C. S., London, 1800—1822, M. R. C. S., England, 1822 to date. Certificate Corporation of Surgeons 1745—1800, Licentiate L. R. C. S., London, 1800—1822, Fellow, F. R. C. S. England, 1844 to date
- (25) See Chapter on "The Uncovenanted and Subordinate Medical Services"
- (26) Glasgow was then the only University which gave a Surgical as well as a Medical degree. This degree was given only for three years, 1819—1822. It was not until 1860 to 1865 that Surgical degrees were given generally by Universities. They were then introduced chiefly in order to comply with the requirements of the Public Services
- (27) A Chair of Military Surgery was founded in Edinburgh in 1806, and filled from 1806 to 1822 by Dr. Thomson, who was succeeded by Sir George Ballingall. Mr. Tinsell, a retired Army Surgeon, began to lecture on the same subject at Dublin in 1846 in the College of Surgeons there. Both these chairs were subsidized by the State, and abolished on the foundation of the Army Medical School

"ABOR ARROW POISON"

By F. N. WINDSOR, B.A., B.Sc., M.D.,

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THE material was scraped off an arrow head removed from a wounded man. It was a moist earthy-looking material.

An oleaginous resinous body was extracted which was soluble in alcohol (90 per cent) and dilute acetic acid, also in ether and in chloroform, but insoluble in water.

It gave the "croton oil reaction" on the tongue and in the pharynx. A little rubbed on the skin of forearm raised a crop of minute papules in 20 hours. This patch was slightly reddened and itched, it was not painful and only slightly tender on pressure, after 10 hours more it had faded and slowly resolved. (N.B.—Croton oil itself will vesiccate the skin.)

Inoculation of half the extract from this one arrow head into a guinea-pig gave rise to no symptoms of poisoning.

The insoluble residue was dry and powdery. It consisted of vegetable fibres, cells and detritus with some earthy matter, but no animal tissue, it gave no physiological reaction.

A minute trace of an alkaloid-like body was obtained which had a slightly bitter taste, but no other characters by which it could be recognised.

There was no aconite present in the poison. I suggest that aconite is not used by the Abors and that the idea, that it is present on their arrow heads, is due to the somewhat similar physiological tongue test, using the frog test no confusion between the two could arise. There is no anaesthesia with croton and to an "educated tongue" the burning tingling sensation is different.

It would seem that the "arrow poison" is a paste made by pounding the soft parts of croton tiglium plant and not obtained from the seeds.

SOME NOTES ON THE TEACHING OF ANATOMY

By HODGKINSON LACK,

CAPT., I.M.S.

LEAVING out of consideration the *sine qua non* of a knowledge of the subject success in the teaching of anatomy depends largely on three factors—

- I A faculty for Analogy
- II A faculty for Drawing
- III A faculty for Demonstration

I—THE FACULTY FOR ANALOGY

Anyone who has had any experience in the teaching of anatomy can call to mind instances in which he has been confronted by the apparent hopelessness of getting a student to understand

some of the simplest facts. The anatomical aspect of the question, *per se*, fails to impress itself on the student, fails to convey any adequate conception to his mind, even though he be far from a fool. It is in such a case that analogy comes in.

For example, a student fails to appreciate the fact that the tract of the fillet is the same thing as that of the Internal Arcuate fibres, he knows where and what the fillet is, and where and what the internal arcuate fibres are, but he knows these as isolated facts, he has failed to synthesize his knowledge.

If now the teacher of anatomy steps in and does this for the student by comparing the point under discussion to that of a street which merely changes its name as one walks along it, then by analogy he fixes an important point in his student's mind once for all.

Again, I have met many a student who could form no adequate mental picture of the anatomical relationships of the middle and the internal ear, I had well nigh given up the matter as hopeless and was coming to the conclusion that some men were bound to go through life without knowing those things. But one day on going into the anatomy rooms in which I was demonstrator, it suddenly dawned on me that the relative positions of certain windows, steam pipes, ventilation shafts and a blackboard were almost exactly those of the cochlea lateral sinus, internal carotid, facial nerve and the various foramina. I got the men together, walked about the rooms with them, pointed out the analogies, and in the end had the satisfaction of seeing that the whole demonstration had been driven home, and that the men knew what they should and could be trusted in after-life to open into the middle ear and the mastoid antrum without damage to adjacent structures.

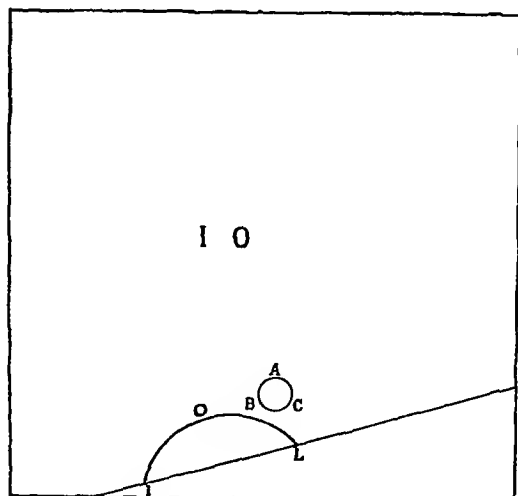
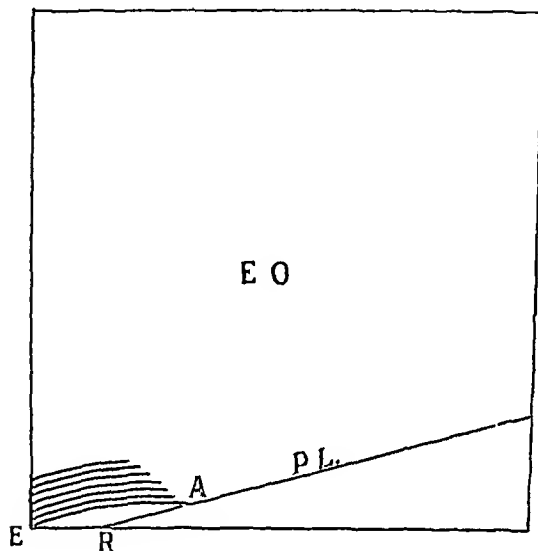
Similar examples of the use of analogy could be drawn from almost any region in the body—the analogy of the coat, waistcoat and trousers in the instance of the arrangement of the fasciae in the region of the groin the analogy of the skull cap in the arrangement of the layers of the scalp, etc., etc.

II—THE FACULTY FOR DRAWING

There are many instances where with the most careful dissection a student fails to obtain a true view and conception of what anatomical relationships mean. For example, take the sub maxillary region. A student may dissect this very carefully, but if it so happen that, when he has completed his dissection, the dissectors on the opposite side of the body have not completed theirs, he may fail to appreciate the fact that one genio-hyo-glossus muscle is in immediate contact with its fellow of the opposite side, and then he cannot have an adequate conception of what the floor of the mouth is, and so, among other things, fails to appreciate the physiology of the deglutition of liquids.

Again, in the dissection of the pterygo-maxillary region the student at the time is limited to a view of the extra-cranial relationships, and so he fails to appreciate the anatomical points on which operations for the relief of middle meningeal hæmorrhage are based.

Take again the dissection of the inguinal region. It requires more than a skilled dissection and a very good subject to enable an adequate conception of this region to mature in the student's mind, and, what is even more to the point in this region, each step in his dissection renders it increasingly difficult for him to keep the whole



region in view with its interdependent relationships.

In such instances the ability to draw out each stage in the dissection on a series of slates or on a blackboard will make it possible for the student to have them constantly before him and thus synthesize them into a proper mental image, thus rendering teaching simple and effective.

III—THE FACULTY OF DEMONSTRATION

Though last in position, this gift—for it is nothing other than a gift—decides eventually

whether an anatomist will or will not be a teacher. I am sure that there are many men now in the service and elsewhere who can call to mind more than one instance of an anatomist who could not teach, and I am equally sure that there are many men who will agree with me that the system of lectures is well nigh hopeless as a means of teaching. For no matter how well a teacher in his lecture he cannot *show* things to his students. The few men at hand may be able to follow him, but those more than 20 feet away cannot. To ensure the best results the teacher must be able to show everything to every student, and this can be done satisfactorily only in the small demonstration. This means more work and a repetition of work which may be somewhat annoying to some, but then no man should undertake the teaching of anatomy who does not have a positive love for his work, who is not content to spend his days working with his students and his nights evolving methods of demonstrating to them.

Anatomy and the teaching of anatomy above all other subjects is a "labour of love," and if a man cares for his work and gives all his attention to it, he will not have to complain of "love's labour lost," but will know that he is laying down the bed rock foundation of a knowledge which will mean incalculable good to his fellow-men. Let me give a few examples of what the faculty of demonstration means.

The average medical student gets heavily stamped when he comes to face the relationships of the peritoneum, he looks upon it as a weird kind of membrane which is everywhere where he does not expect it to be, which twists about and becomes continuous with other parts of itself which he imagined very far away. After a while he gives it up as a bad job or learns a few stock sections parrot-like.

Now all you have to do is to get a big sheet, a short piece of rubber tubing, a long piece of the same and an inflated rubber bag which can be placed between the two pieces of tubing by the insertion of small pieces of glass tubing.

Fold the sheet into two lengthwise and cut it down along the fold, then place the tubing and the rubber bag in between the layers of the sheeting with the short tube (the œsophagus) projecting vertically upwards from in between the layers of cloth. Standing with the apparatus in front of you and with the help of one of your students rotate the "stomach" (the inflated rubber bag) forwards and from left to right and from below upwards. A student then fixes the "pyloric orifice" (the distal end of the inflated rubber bag) and shapes the duodenum out of the long rubber tube, fixing it against your body. You can now demonstrate the gastro-hepatic omentum.

Then taking up a length of the long piece of rubber tubing you can demonstrate the formation of the enteric mesentery, explaining how

the ventral meso-gastrum becomes the 1st part of the duodenum.

Do this by pushing the tubing forward until it is nearly out from between the layers of the cloth, and then, by bending the tubing in a suitable direction you can show how it is that the ascending colon usually has no mesentery

You now come to the culmination of this demonstration. Let the portion of tubing representing the transverse colon have its mesentery, and place it into its proper position; you will find that the "colon" and "meso-colon" lie posterior and somewhat superior to the stomach, and that part of the dorsal meso-gastrum which is attached to the stomach, then the mystery of the posterior boundaries of the lesser sac and of the formation of the great omentum is explained before the eyes of your students, and they will never tell you that the foramen of Winslow is a "hole" in the peritonæum!

There are few things more satisfying than to see a set of students grasp these facts which appear usually to cause them much fruitless thought and vain effort, and while you have your extemporised model in position you can explain to them the positions of various viscera relative to the peritonæum, pointing out the development of such organs as the liver and the pancreas from the alimentary canal and the necessary relationships to the ventral meso-gastrum on the one hand and the dorsal meso-gastrum on the other.

Again, take such another demonstration as that of the inguinal canal and the coverings of the spermatic cord. This will often lead a student into hopeless confusion from which he can be rescued by such a simple contrivance as the following —

(a) Get a piece of cloth about eight inches square, label it E O, and have the edges hemmed, then draw out lines on it as indicated in the annexed diagram. Cut out the triangular orifice E A R, leaving in the hem along the line E R. Then get a small tube of cloth made and sew eyes on to it corresponding to hooks sewn on to the edge of the orifice E A R at the points E A and R.

(b) Get a second similar square (I O in the annexed diagram) and mark it out as shewn in the diagram, cut out the sector I O L and then cut out the circle A B C. Make a second small cloth tube with hooks to hook on to eyes at the points A B and C.

(c) Get a third similar square (T M in the annexed diagram) and mark it out as shewn in the diagram, cut out the sector T O L.

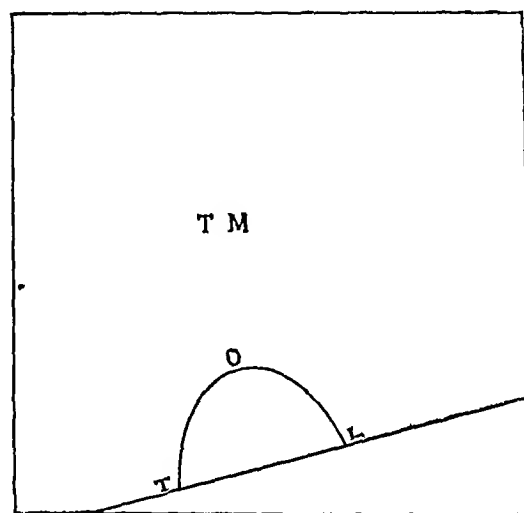
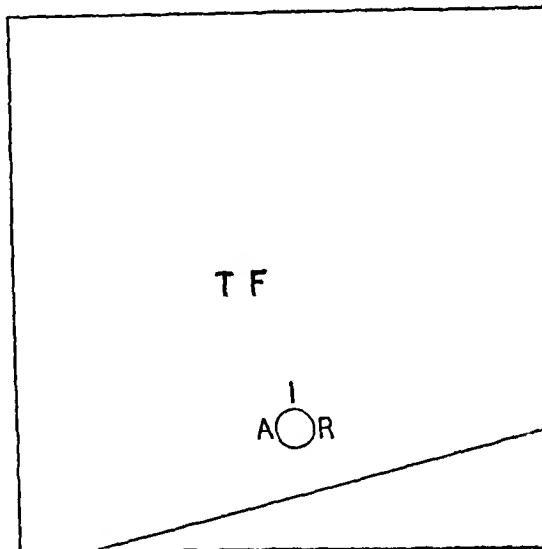
(d) Get a fourth similar square (T F in the annexed diagram) and cut out the circle I A R, make a third small cloth tube with hooks to hook on to eyes at the points I A and R.

(e) Push a piece of rubber tubing down this last cloth tube and superpose on the T F square the T M square, the tube passing through the sector T O L. When you superpose the I O

square pushing the clothed rubber tube down the cloth tube attached to the points A B C. Finally superpose the E O square and push the now twice-clothed tube down the cloth tube attached to the points E A R. Now get the four squares of cloth stitched together along the line P L (on the E O square) which is identical in position in the case of each of the squares.

(f) In the case of squares I O and T M cut away the triangular area of cloth below the line corresponding to P L.

With this little piece of apparatus you can now demonstrate clearly to any student the whole



of the coverings of the spermatic cord and of inguinal hernias, you can also show him how the fascia transversalis (T F) comes to form the anterior wall of the femoral sheath.

Further, by stitching a piece of cloth to the inferior hem of square E O and making a "saphenous opening" in it, you can show the student the important relationships of femoral hernia, using a red and a blue pencil or chalk to represent the femoral artery and vein and a small triangle of card-board to represent the reflexion of Poupart's ligament, Gimbernat's ligament. The model is very easily made (with the help of a

seamstress!) and will give immense satisfaction when it is seen what a great help it gives to students

So much for rough working models

Two other methods of demonstration are invaluable and, in the rooms in which I acted as demonstrator, were found to give students the proper conception of anatomical relationships

The one method is that of serial sections and sets of these can be prepared from the limbs, the thorax, the head and neck and the lumbar

Abdominal sections will prove a delusion and a snare unless one can prepare sections from four bodies, two with the bladder empty and distended respectively, and two with the stomach emptied and distended respectively

I am tempted to add another two series of sections, namely, one series with the bladder emptied and the stomach distended, and the other with the bladder distended and the stomach emptied

As a student I learned many useful facts from books and dissections on abdominal relationships but found out later on that they had to be modified somewhat in view of observations made on the lines indicated above. The beautiful models which one sees in dissecting rooms representing casts of abdominal viscera doubtless give for the particular state of the body from which the preparation was made, but they fail in accuracy when contrasted with those from another body in which the different hollow viscera have been distended. The second method of demonstration which will be found of great value is that by means of the stereoscope. In the rooms in which I worked we were the proud possessors of a stereoscopic cabinet, the views being taken by the lecturer and one of his demonstrators. Previous to this we had often experienced great difficulty in getting students to realize the change of plane in certain structures, notably for instance, in the region of the sphenous opening. Many a student could not quite grasp the receding of the pubic portion of the falciform ligament and the anterior position of the falciform border, but when once he had looked at the stereoscopic view of an excellent dissection which we were once able to obtain the whole matter became quite clear

This instance enables me to emphasize a point of great advantage in stereoscopic demonstrations

It is not always that one can obtain good dissections of certain regions, as for example, in the region under discussion, the method of injecting the blood vessels in situ from the femorals rendering a subsequent dissection of the sphenous opening often very difficult to be obtained. With the stereoscopic camera each good dissection is recorded permanently and becomes available for carrying on the useful work with successive generations of students

One last point remains to be mentioned, and it is one on which too great stress cannot be laid

It has been my misfortune to hear lectures, to read books and to have to teach students who had suffered (as I had suffered) from reading books and hearing lectures in which very loose terminology had been used. One writer or lecturer uses the term "in front" when the correct one is "anterior," another uses the term "below" and the proper one is "posterior," and so on

Teachers of anatomy can never impress on their students too strongly the important fact that the anatomical position of the body is the erect attitude with the upper extremities hanging by the sides and with the forearms fully supinated, so that the palms of the hands look forwards and the thumbs outwards, and having so impressed their students they should take the greatest care never to use terms with reference to the body other than in that position, and these terms should be the correct ones, such as "anterior," "superior," "internal," "medial," "lateral"—not such lax expressions as "below," "in front," "to the side," "to the right"

Anatomists in great measure fail to remember that their largest audiences are composed of very junior students, and that to these nothing is of greater value than rigid precision of terminology not only in enabling them to obtain an accurate and unconfused knowledge of this particular science—the basis of all medical knowledge—but, and this is of even greater importance, in developing in them in the days of their youth those habits of precision, method and accuracy, the absence of the presence of which will determine whether in after-life they will become mere superficial empirics or ornaments to the profession and skilful exponents of the *Arts Medendi*

SOME NOTES ON THE PRESENCE OF AIR IN THE BLADDER AMONGST WOMEN

By C. C. BARRA,

MAJOR, I. M. S.,

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In the last five years I have come across in women four cases of automatic distension of the bladder with atmospheric air. Three of these cases occurred amongst European ladies, and one, the fourth case, was a native hospital patient. In two cases, whilst this symptom lasted, there was acute pain of a colic nature whenever the bladder got greatly distended with air, in one there was considerable inconvenience, whilst in the fourth native case the condition gave rise to very little trouble, but the symptoms lasted but a short time

I made notes of these patients because though it is likely to other medical men connected with gynaecological work have come across similar cases I can find no reference to such a condition as this in the text-books which I have been able to consult, and moreover the symptoms in the first case at least were very puzzling and gave the

patient's relations and myself much anxiety I think, however, cases like these must be of infrequent occurrence, for in two cases Nos 2 and 4 that I saw in consultation the medical attendants were both apprehensive that a fistula had somehow formed between the bladder and the intestine, in fact in case No 4 the husband had been informed that such was the case and that the prognosis was grave. I think however, on careful consideration of the symptoms exhibited such a diagnosis cannot be maintained, for it will be noted in each patient the temperature remained normal, and the urine also showed no signs of such contamination as would be sure to arise should any, however, small opening exist between the bladder and the intestine. The air, too, which was expelled from the bladder was absolutely odourless and except for the pain arising from the acute distension of this viscus no serious symptom was present, and in the intervals the patient felt quite well.

Case No 1—European woman, aged 34, the wife of a Government official, in comfortable circumstance, and the mother of two children. Formerly she had been of active habits, but for last three years had suffered off and on from colitis, and lately from cervical endo-metritis, the result of an early abortion. She was of an unexcitable temperament, but her general health was poor, and the muscular tissues generally soft and flabby. I was asked to see her on account of cramp like pains in the hypogastrium which were only relieved by the passage of air by the urethra. She informed me she had suffered in this way for some three weeks, but the affection was getting worse. The air could be usually expelled by muscular effort or when she passed urine, but for the last few days she had been unable to do this except with great trouble, and in consequence had suffered much pain.

On examination the bladder could be felt above the pubes distended and tympanitic, and vaginally the relations and size of the distended bladder could be easily made out. The uterus was large and slightly tender, but in normal position, the cervix was eroded and there was much thick yellow cervical discharge, otherwise the pelvic organs felt normal. The orifice of the urethra appeared slightly more patulous than normal. A catheter was passed with ease and without pain, and immediately a large quantity of air escaped under considerable pressure relieving the patient's pain at once. The air was quite free from any offensive smell and the quantity expelled was surprising.

This case puzzled me exceedingly and in order to make a diagnosis and to be sure, no air was being introduced into the bladder by artificial means, the patient was confined to bed and two nurses engaged with instructions to watch the patient closely day and night. I did not allow

the nurses to pass a catheter, but left instructions if pain recurred the patient was to be encouraged to try and expell the air herself, and that if necessary I was to be sent for. Early next morning I was summoned and found the patient in great pain, and on passing a catheter a large quantity of odourless air was evacuated with surprising force. For the next three days I was summoned to draw off the air two and three times in 24 hours. During this time the patient managed to pass urine at times quite normally, though air was expelled with it, but whenever the air distension occurred and had to be relieved by a catheter, very little urine was obtained. The examination of the urine proved it to be normal and the average quantity passed was a little over 30 ounces in 24 hours. As soon as I had satisfied myself that air was really collecting in the bladder and was not being injected artificially, I asked another Surgeon to see the case in consultation. After he had examined the patient and had ocular demonstration of the forcible expulsion of much air when a catheter was passed it was agreed to curette the patient and put her on a course of ergot and strychnine.

This was done, and in a few days the trouble ceased entirely. No further pain occurred, though for a some few days air and urine were voided together, the expulsion of air then ceased and did not return. The patient left for England after six weeks and has since told me she had no recurrence of the trouble. I have gone into this case at length as it is largely typical of the other cases met with, I think any hysterical condition may be eliminated, the patient was happy in her home and did not wish to go to England, moreover she was kept rigidly in bed and under constant trained supervision. When the bladder got acutely distended there was undoubtedly great pain which made the patient perspire and affected pulse rate, there was never any rise of temperature.

Case No 2—Was a European female, aged 35 years, the mother of three children, the youngest five weeks old. I was asked to see her in consultation as she complained of passing air by the urethra in considerable quantities and accompanied by a noise similar to that of passing flatus by rectum. The patient complained of no pain, but the air escaped on any muscular exertion, such as getting out of a chair, and the accompanying noise made her diffident of going into society. Her medical attendant was also apprehensive, some fistulous opening between the bladder and intestine might have formed as the result of childbirth. The patient was a quiet thoroughly sensible lady, she had had no trouble with her confinement, but long residence in the East had made her general condition poor and her muscular system was very flabby. There was no doubt of the air being expelled from the

urethria as this was done in my presence, the air was quite odourless but escaped with a fairly loud and distinctive noise. The pelvic organs were normal, but there was more descent of the uterus and vaginal outlet than normal, and the uterine ligaments seemed very lax. Ergot and strychnine were given, and the unpleasant symptoms vanished in about three weeks.

Case No. 3—A Burmese woman, aged 30, the mother of one child. She was admitted into hospital much emaciated and suffering from double pyosalpinx and an enlarged uterus with also a profuse purulent cervical discharge.

Laparotomy was performed, and both tubes and the uterus removed. A complete hysterectomy being performed.

Two days after the operation the ward Sister informed me the patient was passing air by the urethra whenever the urine was passed, and she feared some complication had occurred. A catheter was passed, and there was no doubt of the escape of air which was odourless, but there was no rise of temperature, and the patient was quite comfortable. This symptom continued for some 14 days, but gave rise to no pain or discomfort, it gradually ceased as the patient gained strength. The patient was in hospital for some five weeks, but made an excellent recovery, and left hospital enormously improved in condition with her bladder acting quite normally.

The urine was daily examined but always proved to be normal. Nothing was ever found that could in any way point to a vesico-intestinal fistula or any connection between the bladder and an abscess.

Case No. 4—A European lady, aged 30, had had several miscarriages, but no living child born. She had suffered from pelvic trouble for three years, originating with the removal of an ovarian cyst which had been followed by pelvic suppuration, resulting in a sinus communicating with the cavity of the uterus.

On this account she went to England where a supra-vaginal hysterectomy was performed.

Apparently the operation was successful and she left for India in fair health. On the way out she had a slight attack of fever and the voyage being very hot, her general condition deteriorated greatly, she then began to complain of great pain of a cramp like nature in the hypogastrium and the passage of air by the urethria. The ship's Surgeon informed me that on two occasions he was compelled to pass a catheter to relieve the bladder distension when a great deal of air and very little urine was expulsively evacuated and the pain was at once relieved. The air expelled was quite odourless, but the quantity surprising, there was no rise of temperature. During the last seven days the weather had been cooler and the symptoms had not been so severe.

Seen in consultation there was no doubt about the air being passed with the urine it was odourless. The patient was a nervous woman and in poor health but a vaginal examination disclosed no pelvic inflammation or swelling. The urine on examination was found quite normal. Her husband who had shared her cabin on board ship assured me there was no possibility of the air being artificially introduced, ergot and strychnine was advised. I have not heard more of the patient, though I feel sure I should have done so if the symptoms had not subsided.

The question naturally arises how does this condition of air in the bladder occur. My first impression was that it had probably been brought about artificially by the patient herself as a result of that disordered mental condition commonly called hysteria. With this idea in mind in case No. 1 means were taken to eliminate such a cause, and I am satisfied that when once this patient was placed under skilled nursing supervision no such artificial inflation of the bladder was possible. Nevertheless the symptoms continued (exactly the same as previously). In cases 2 and 3 any artificial inflation of the bladder was out of the question, and in case 4 there is no ground for supposing such an action was probable.

In all patients one condition was constant and that was their muscular system had lost tone and the visible muscles were flaccid with little contractile power, it is probable, therefore, that the muscular tissues of the bladder walls were in a like flaccid condition, and I believe the air was aspirated into the bladder by the abdominal respiratory movements in a somewhat analogous manner to that in which the rectum or vagina can be ballooned by elevating the pelvis and allowing free admission of air. It does not seem for this process to take place that in every case elevation of the pelvis is necessary, for I believe air will enter and balloon the vagina as long as there is free inlet of air even in the erect position.

In support of this view I would mention that it is not unusual for a patient with a ruptured perineum to seek operative measure entirely, because of having what they describe as "an open" feeling. If such a patient be examined frequently no prolapse or displacement of the uterus will be discovered, but the vagina will be found ballooned by air. It seems possible then when the whole of the muscular system has completely lost its tone air may be aspirated into the bladder along a flaccid urethria by the respiratory movements of the abdominal muscles aided by the negative pressure constantly present in the peritoneal cavity. Why the bladder should not be able to expel the air is difficult to explain, in two of the cases met with it could do so in the two cases in which this was not accomplished at intervals great pain from acute

distension of the bladder resulted. The action of the sphincters of the human body is complex and as yet imperfectly understood, and it may be that air is a substance which checks dilation of this class of muscles, at any rate, there are few of us who are not aware of the pain that arises from distension of the stomach or intestines with gas, and how difficult it is to get the sphincter-like muscles to dilate and allow it to escape.

In support of the view expressed above I would lay stress on the fact that drugs exciting the contractile power of the muscles and of a nature to improve the muscular tone generally in each case brought about a fairly rapid cure of the affection.

I would mention that whilst no bacteriological examination of the urine was carried out, it was in all cases quite normal to the ordinary clinical examination, so I think the presence of any gas forming bacteria may be excluded.

I have mentioned these cases at length as the first one puzzled me exceedingly, and that such a state of affairs has puzzled others is obvious from the fact that in two other cases the medical men in attendance were greatly disturbed and were of opinion some very serious complication had arisen. It may be cases will not be found so rare when enquiry is made and the fact recognized that air may under suitable conditions in some way enter the bladder, automatically, cause acute distension, and be evacuated in large quantities. The recognition of these facts will, I think, prevent a mistaken diagnosis and relieve greatly both the patient's and the doctor's mind.

The treatment, I believe, to be indicated is to attend to any condition of the pelvic organs, such as is likely to impair the contractility of the bladder (*ie*, in the first case chronic endo-metritis and sub-involution of the uterus), and at the same time to administer such drugs as ergot and strychnine that will improve the patient's general condition and remedy the loss of muscular tone.

A Mirror of Hospital Practice

SOME FRACTURES TREATED BY OPERATIONS.

A MARTIN LEAKE, V.C., F.R.C.S.,

Bengal Nagpur Railway

OWING to the teaching of Arbuthnot Lane it is now generally accepted that simple fractures, which cannot be satisfactorily reduced and kept in good position by the ordinary methods, should be operated upon and the bones fixed in position by some form of bone suture. Nobody would suggest that the ordinary uncomplicated fractures should be operated upon, because if they

are treated by splinting, early massage, and passive movements, the results are quite satisfactory and there are no risks. There are many simple and comminuted fractures especially in the neighbourhood of joints which cannot be reduced by external manipulations, and if left unreduced will certainly lead to much permanent incapacity of the limb. These cases require operation.

The treatment of compound fractures is different and probably most Surgeons will agree that they should not be meddled with more than is absolutely necessary. Any attempt made to suture the bones in an infected wound does much harm by spreading the infection.

As far as can be gathered in a casual way there seems to be still much opposition to the open method of treating fractures in this country. The argument against it, which is usually put forward, is that a simple fracture is made compound and this is unjustifiable owing to the dangers of sepsis. Of course the danger of sepsis is always present, and it is greater when a foreign body is left in a wound. It is, however, quite possible if the necessary care is taken to reduce the chances of sepsis to a minimum, and so enable these bone operations to be carried out with the same degree of certainty as any other operation. To condemn a certain line of treatment because it requires every care to be taken to carry it out, tends rather to show that ordinary operations are sometimes done with a good deal left to luck and the power the human body has of tolerating and disposing of dirt without giving away the Surgeon.

It would be mere presumption on my part to pretend to have anything new to say on this subject after Arbuthnot Lane has piloted it through so much opposition with such success, and has firmly established it as the correct treatment. My only object is to endeavour to show by these few cases that fractures can be treated by operation with considerable benefit to the patients by any Surgeon, who will take the necessary care with his methods.

The details of the methods employed by Arbuthnot Lane and the special instruments which he uses, are now well known to every body. I shall only mention a few points which, I think, are specially useful. Of course, every case differs and each has its special requirements, but the general principles are the same for all and can be divided into two parts, namely, those to do with the prevention of sepsis, and those to do with the bone fixing.

There is no mystery about the steps to be taken against sepsis, they are the same as those for any other operation, but must be carried out with the greatest possible care. The patient should not be over-prepared and his skin made sodden and converted into a culture bed for

microbes. The mops should be boiled in a towel, so that they may be wrung out in a mass and not touched by hands. There should be only one assistant having anything to do with the wound, and he should take up and use the mops on forceps so that his fingers need not be put into the wound. The Surgeon should get the instruments from the tray himself and not allow anybody else to touch them. Arbuthnot Lane says that the Surgeon "should not put his fingers into the wound and that all manipulation should be done with instruments." This is no doubt the ideal thing. Few of us have, however, the manipulative skill to keep to these instructions always. Old fractures present great difficulties sometimes when the bones are firmly bound to the surrounding parts by fibrous tissue, and the separation is difficult even with one's fingers to help. Some people think gloves are necessary, others do not use them. If the operation has been an extensive one, the wound should be drained for the first 24 hours otherwise there will be an accumulation of serum.

The actual fixing of the bones is greatly a matter of joinery and some knowledge of this trade is most helpful. It is hardly likely that a person, who cannot join two pieces of wood on a carpenter's bench, will make much of a job of joining two pieces of bone at the bottom of a deep wound, with all the troubles of antiseptics to worry him at the same time. Silver wire should be obtained from home, the article supplied in this country cannot be depended upon. It should be heated in a flame till it is quite soft and then not bent before it is actually being placed in position. Bending hardens silver wire. When screws are used everything depends upon drilling the holes correctly. Each size of screw requires two sizes of drills, one for the shank and a smaller one for the thread. It is useless putting in screws unless they get a firm hold.

The following cases are not a picked lot, they are the only cases I have treated by this method and none have been left out. I have heard it stated that X-Ray photographs prove nothing in this work because they can be made to misrepresent the actual conditions. Undoubtedly this might be so and nice pictures obtained by photographing cases soon after the operation. In the following cases the time which elapsed between the operations and taking the photographs is given —

Case I—European male. Fracture of both bones of right forearm. Admitted to hospital for operation one year after accident, with radius ununited and ulna united in bad position. Hand quite useless because any contraction of the muscles of forearm causes upper end of lower fragment of radius to project under the skin on ulnar side and the skin is threatening to give way. Radius wired with result that patient has a good strong hand and can use it for work. The X-Ray photograph of result was taken *five years after* operation. It shows a bar of bone formed by the

periosteum which must have been left behind when the radius was being separated from the surrounding scar tissue.

Case II—Native male. Ununited fracture of tibia and fibula. Leg cannot take any weight, there is much angular deformity. Bones could not be got into a good position on account of shortening of muscles and scar tissue. Tibia fixed with screws and firm union obtained. No photograph before operation and length of time X Ray was taken after operation not known. It was, however, taken after patient began to walk about.

Case III—Native boy. Fracture of radius and ulna, Radius joined in bad position, and pronation and supination very limited. Radius divided and wired, care being taken to keep both fragments fully supinated when they were being drilled for the wire. Movements normal when patient left hospital. No photograph taken before operation, photograph of result taken *two months after*.

Case IV—Native male. Transverse fracture of upper end of tibia and fibula. Injury four months old and bones firmly united. The X Ray shows shaft of tibia impacted into upper end and in a very much hyperextended position. The shaft is also rotated inwards. When the knee is fully extended the leg forms an angle of about 70° with the thigh. Patient can only hobble along with difficulty. Tibia divided at level of fracture and a wedge of bone removed to allow the shaft to be brought into line with the upper end. The two portions fixed with screws and wire. The centre of the wound broke down and a small fragment of bone which had separated from the shaft of the tibia came away about three months after operation. X Ray of result taken *nine months after* operation. Patient now walks with only a slight limp and can carry on his work as a cooly.

Case V—Native male. Fracture at junction of middle and lower third of right thigh. About three inches of shortening. Several attempts made to reduce shortening and get leg into position, but without success. Operation showed a comminuted fracture, a V shaped piece of bone about two inches long having been broken off partly from the upper and partly from the lower portions of the shaft. There was also much damage to the surrounding muscles. The loose fragment of bone was lying across the wound, and almost completely separated from its periosteum. This no doubt prevented reduction. The loose piece of bone was taken away and the shaft was joined by a plate which bridged across the gap. Screws were not put in where the piece of bone was absent as they would not have had much hold. X Ray photograph taken *three months after* operation. Result, no deformity or shortening, but some stiffness of leg due to the extensive damage to the muscles at the seat of injury.

Case VI—Eurasian boy. Fracture at the lower end of the humerus. Case seen a fortnight after injury, arm had been put up on right angle splint. Flexion could not be carried out beyond a right angle. Lower end of humerus put back into position, no form of fixation required as there was no tendency for displacement to recur. Photograph *three months after* operation. Movements nearly normal when patient left hospital and exercises being continued. This case would probably not have needed operation if the arm had been put up in the fully flexed position at first.

Case VII—Native male. Injury to right elbow joint six months ago. Only a very limited amount of movement can be carried out, joint cannot be flexed quite to a right angle, no pronation or supination. Patient wants operation because he cannot get his hand up to his mouth to feed himself. X Ray shows much bony deposit in front of joint. Operation, head of radius and much surrounding callus removed, result extremely satisfactory at the time, and for some time afterwards, but the bone in front of the joint began to reform and the movements, in spite of all that could be done in the

SOME FRACTURES TREAT

A MARTIN LEAKE, V

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CASE I—Before operation



CASE III

way of exercise and massage, gradually became more and more limited. The patient left hospital without being much improved. This is probably one of those cases of Myositis ossificans following trauma, and it gives one a lesson to be very guarded in prognosis in this kind of case.

Case VIII—Native male. Old knee joint disease. This case is given because it illustrates the same treatment. Joint ankylosed in flexed position. Foot can not be put to the ground. Knee joint excised and articular surface of patella removed, bones fixed by wire. Result: leg straight and patient can walk with it. Photograph two months after operation.

AN IMPROVED METHOD OF USING THE TONSIL GUILLOTINE

By A. H. PROCTOR, M.D., M.S.,

CHAPT., I.M.S.

In recent years a tendency has grown among throat specialists to abandon the use of the guillotine for more elaborate and difficult methods of removing the tonsil.

This has become so marked that two operations are now distinguished, *viz.*, tonsillectomy, in which only a slice of the enlarged tonsil is removed, and tonsillectomy, in which the whole tonsil is removed with its capsule intact. The former operation is carried out with a guillotine, the latter by dissection. The merits or demerits of the rival operations I do not propose to discuss. To those interested in the question, both sides of the question will be found fully set out in the papers of Drs. Hett and Mackenzie read at the British Medical Association Meeting in 1910. It is sufficient to state that, in America and in the leading hospitals at home, tonsillectomy is coming more and more into favour.

A few words as to some points in the anatomy of the tonsil. Like all other lymphatic glands the tonsil has a distinct capsule of its own. It lies in a recess between the anterior and posterior pillars of the fauces. On its oral surface this capsule is attached to and blends with the mucous membrane covering the faucial pillars. On its outer surface it is only united by a plane of loose areolar tissue to the inner surface of the superior constrictor.

In dissecting out the tonsil the attachment of the capsule to the anterior pillar is first incised, this plane of loose areolar tissue entered and the tonsil separated by blunt dissection till the operator reaches the attachment to the posterior pillar. This is then divided and the tonsil is free. Now it is obvious that the guillotine can quite efficiently divide the attachment to the anterior and posterior pillars, and if one could ensure its blade entering this plane of loose areolar tissue it would enucleate the tonsil.

Occasionally this happened with the ordinary text-book method of using the guillotine, but

in the majority of cases the blade enters the substance of the tonsil.

Mr. S. Whillis kindly demonstrated to me his method of using the guillotine, by which he ensures that the blade does enter this plane of areolar tissue and so enucleates the tonsil.

For the operation a good light is essential, and the operation table should be placed parallel to the window. If it can be obtained an overhead light is desirable.

The patient is placed lying on his right side with a sand-bag under his shoulders, so that the head hangs down somewhat.

A Doyen's gag is introduced but not fully opened. (*N.B.*—The jaws of the gag should engage on the central incisor teeth and should not be covered with rubber.)

Anæsthesia is then induced in the usual way. As soon as the patient is under, the inhaler is removed, the gag fully opened, and from then onwards it is the anæsthetist's duty to take charge of the gag and see it does not slip.

To make my description clear I will describe the operation in stages, but in practice the whole manipulation for each tonsil is a smooth and continuous one.

First Stage—The patient is lying on his right side, the operator stands opposite his chest looking towards his head, with the light shining well into the patient's mouth.

A Mackenzie or similar guillotine is passed into the mouth and using it, in the same way as a Frankel's tongue depressor, the tongue is pressed down till the lower pole of the tonsil is seen. The ring is then pressed firmly upwards so as to engage the lower pole of the tonsil.

Second Stage—The hand is now pronated, so that the shaft becomes vertically placed, the right edge looking towards the roof of the mouth and the left resting on the tongue.

At the same time the handle is carried over from the middle line to the opposite angle of the mouth so that the shaft runs obliquely from the left angle of the mouth to the posterior pillar of the fauces, against which it now rests. By now continuing this latter motion the tonsil and anterior pillar of the fauces can be levered or lifted forwards towards the teeth, till the anterior pillar is stretched taut across the ring of the guillotine.

Third Stage—To the outer side of the margin of the anterior pillar will be seen a rounded elevation caused by the tonsil. If now the thumb of the left hand be pressed on this the tonsil can be pressed through the ring of the guillotine. It will be felt to engage in the ring, and if the pressure be continued the anterior pillar becomes everted and thereby lifted up, so that the blade passes just under its margin. At this moment

the blade is gradually driven home, and as soon as the attachment to the anterior pillar is severed the pronation of the hand is continued. By the time the hand is completely pronated and the under-surface of the shaft looks towards the roof of the mouth, the blade has gone right home. The tonsil comes out resting on the under surface of the blade.

The left tonsil is removed by a similar procedure, but in this case the patient is best on his back, the operator standing at his head looking towards the patient's feet. The tonsils should be at once examined to see if their capsules are complete. Any small portion that may have been left can be removed in the same way.

After removing the tonsils any adenoids should be removed, for which purpose I prefer a Beckmann's cuvette fitted with St. Clair Thompson's cage.

I do not, however, believe in the indiscriminate scraping of the pharynx in all cases of hypertrophied tonsils. In many hospitals at home it appeared to be a routine practice to scrape the pharynx in all cases of enlarged tonsils. Judging by the tags of tissue removed, this seemed an unnecessary procedure in a large number of cases.

The only disadvantage of this method is that common to all enucleations and that is that a larger proportion of cases bleed, than with tonsillotomy. The arteries are divided closer to their origin and before they have broken up into small branches.

In my earlier cases it was common, and I at one time contemplated giving up the method for that reason. I found, however, that it was usually the result of wounding the anterior pillar, and since I have been careful to avoid this accident I have had no case of hæmorrhage.

If it should arise it is advisable to follow a definite procedure. Before the operation two pieces of sponge, approximately the size of the tonsillar fossa, are mounted on straight sponge holders and kept ready. Immediately after removal of the tonsils these are pressed into the gap left on either side, and with the handles crossing one another in the mouth steady pressure can be maintained indefinitely as a clear air way is left between.

Should pressure fail to arrest the bleeding an attempt is made to clip and ligature the vessels, while an assistant depresses the tongue so as to give a clear view.

In only one case have I been unsuccessful in thus stopping the hæmorrhage, and in this case I finally placed a piece of sponge in the tonsillar fossa and with a handled needle stitched the two pillars of the fauces together over it.

Finally, it rests with each Surgeon to devise or choose his own method of operating, but the

above method so combines all the rapidity and ease of the old tonsillotomy operation with the advantages of tonsillectomy that it deserves a trial.

THE VALUE OF ANTISTREPTOCOCCUS SERUM (POLYVALENT) IN ERYSIPELAS

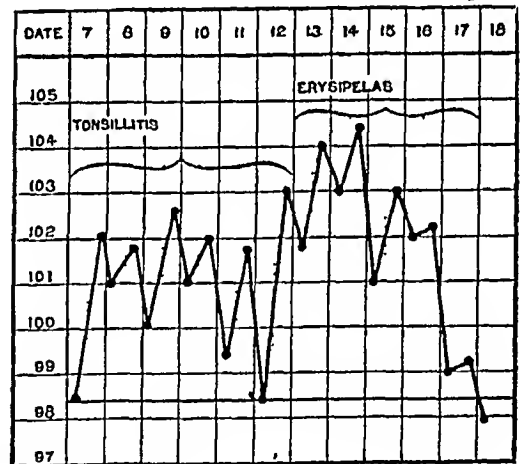
BY N S SIMPSON,

CAPT., I.M.S.,

Medical Officer, Lawrence Military Asylum, Sanawar

THE notes in this case show that though the value of antistreptococcus serum (polyvalent) is disputed, in cases of erysipelas, a favourable result is sometimes obtained.

The patient, a girl, aged 15, came to hospital on the 7th March complaining of sore-throat. She was found to be suffering from acute tonsillitis. The usual treatment for this complaint was adopted, and by the morning of the 12th, the throat condition was found very much improved. That day she picked a pimple on the left side of the face. On the evening of the



13th there were distinct signs of erysipelas, and the next morning a large vesicle was found extending from the nose across the left cheek. It was incised and locally a powder of Zinc Ox, Acid Boric and Starch was applied—the whole face was enveloped in a thick mask of cotton wool. Internally, she was put on large doses of Tr. Fern. Perchlor. This treatment was continued till the afternoon of the 16th, and, as there were no signs of improvement, 10 c.c. antistreptococcus serum (polyvalent) were injected under the skin of the abdomen. Next day her temperature came down to 99 and the local condition showed improvement—the œdema under the eyelids was less and the rash not so bright. She had no temperature after the 18th. She improved daily and was discharged quite fit and well on the 31st.

Indian Medical Gazette.

JANUARY

ANNUS MEDICUS, 1911

IN our annual review of Medical and Service matters in India last January, we referred to the uncertainty and foreboding which during the previous year had prevailed to some extent in the ranks of the Indian Medical Service. Up to the present time of writing nothing more has been heard of the endeavour of the Director-General to improve and put on an up-to-date basis the military side of the service, but an announcement on this subject cannot be long delayed.

Nevertheless from a service point of view the year 1911 has been an important one. The block in promotion is as firm as ever, and especially in Bengal where, as we showed in our December issue, the time of promotion in Bengal to the selected list is far behind that in Madras and in Bombay, and there is no immediate prospect of the block being cleared away.

During the year the service lost several valuable lives, and among those on the active list, the untimely death of Lieut-Col J W Leshe, CIE, the Sanitary Commissioner with the Government of India, who had done so much for scientific research in this country, has especially been regretted. The question of filling this post has not yet been settled, but we hope that the Director-General may in the change foreshadowed be put in a position as regards sanitary matters more fitted to the head of the Medical Department. In India we are assured that there is no intention of abolishing the post of Sanitary Commissioner, and it will not share the fate of other Government of India Heads of Departments about which much has been written during the year.

On the contrary, the inclusion of the Sanitary Department with that of Education under a separate Member of Council will rather tend to greater attention being paid to sanitary matters, and the recent speeches of the Member for Education and the valuable memorandum issued by the Sanitary Commissioner, on which we recently (November) commented, shows the Government of India are fully alive to the needs of the situation, and is prepared to do more than it has ever done before.

The establishment of a School of Tropical Medicine in Calcutta is soon expected, and the necessary buildings are being got ready. We so firmly believe that the only proper place for a Tropical School is in the Tropics that we can only hope that the new school will be given a complete and whole-time staff, and that research work, as well as postgraduate teaching, will be wisely encouraged.

The publication of *Paludism* and the working of the Malarial Bureau at Amritsar are sure and certain signs and landmarks of progress. It is not the least of the benefits conferred by the publication of *Paludism* that it makes known to the world outside India what has been done and what it is proposed to do as regards the suppression of malaria.

We also look forward with hope to the benefits to be derived from the special fund for Medical Research in India. The training of medical men at the Malaria Bureau and at the Central Research Institute are also new departures of which every year shows the use and value. Among the more purely service matters on which we have commented during the year, are study leave, the new rules for accelerated promotion and the new and improved scale of pensions.

Study leave continues to be largely made use of, but the difficulty of getting leave has not lessened, and the fact that officers take longer periods of leave, including period of study leave, has not made it easier for those who remain at work to get the often much-needed change and rest. It must be recognised that the old rules and percentages allowed to be absent do not work fairly now that men by the use of study leave and by adding privilege leave take longer spells than they used to.

The new regulations for the grant of six months accelerated promotion are certainly an improvement, and should do much to equalise the chances and open the opportunities for qualifying to all officers.

The grant of new rule of pensions at a steadily increasing rate from 17 years to 30 is altogether admirable. It is difficult to say how this will effect the block in promotion. It will be a temptation to those in doubt to remain on a year and thereby increase the pension, which in these days of high living by no means represent the same as they did in the days when the present rates of pensions were fixed.

There is a considerable amount of dissatisfaction among officers of all the Indian Army Departments as to the family pension funds. It is said that subscribers do not get the insurance value of their compulsory subscriptions and this in spite of an apparently large surplus on the working of the fund. What men want is not any lowering of the subscriptions, but a higher rate of pensions for widows and children.

Another bone of contention has been buried, we hope for ever, in the new and sensible regulation on the fee question. It is a pity this matter was ever raised in the way it was, it is ended now we hope, but the evil that it did in recruiting for the service will live after it.

The recent regulation for the appointment of officers on the active list to the personal staff of the King-Emperor is one which has been appreciated.

The service during the year has lost some of its best men,—Lieut-Col Leslie, whose loss we have referred to above, Major George Lamb who made a name for himself in plague, Malta fever, and antirabic researches, Major Campbell Dykes, a very energetic and promising Civil Surgeon in the United Provinces, and Lieut C Charlton, a young officer who seemed destined to follow in the footsteps of his relative, Sir Havelock Charles, K.C.V.O., the Surgeon to the King, whom at present we welcome again among us in his short visit while on the staff of the King-Emperor.

Among those who have retired during the year 1911 we must mention Lieut-Col D. G. Crawford, to whom for many years past our readers have been indebted for countless articles on the history of the service. We are glad to be able to announce that Lieut-Col Crawford is working hard at the writing the *History of the Indian Medical Service* which we are all looking forward to, and which will certainly be purchased by every man in that service.

Turning now from the service to the *Indian Medical Gazette*, we have to chronicle a continually increasing circulation and a continuous stream of contributors, many of whom are young men and new to this journal and to such we offer a hearty welcome.

During the past year we have endeavoured to get papers dealing with medico-military matters, and must specially call attention to the valuable

papers contributed by Lieut Col P Hehn, M.D., F.R.C.S. (Ed.), I.M.S. We shall be glad to have more articles dealing with matters of special interest to officers in military employ. Among the subject dealt with in our columns this year first place must be given to those papers by Major Rost and Captain Beauchamp Williams on leprosy—there has been more progress in the treatment of leprosy during the past year than in the past fifty. The work done in those far off frontier stations of Gilgit and Chitral by Major R. McCarrison is of great value and it forms the most original work done on Goitre for many years past.

The interest taken in the minor fevers of India and especially in dengue and sandfly fever, etc., is shown by the admirable papers we have published by Major Wall and Captains Stewart and Campbell Munro.

The drug introduced just a year ago for the treatment of syphilis and allied spirochætal affections now called salvarsan has occupied our attention, and it has been used to a considerable extent in India, though medical opinion is not yet settled as to its safety and to the continuance of its good effects, there is no doubt as to the striking and immediate good results obtained.

A couple of papers by Major Cochran and Capt Heffernan have established the existence, and at the same time the rarity of general paralysis of the insane among natives of India.

Not so much has been written in these columns this year about Smith's operation for cataract. The publication of Lieut-Col Smith's book on the subject was an event of importance. The operation has been largely done and has been much discussed especially in America and in ophthalmological publications, and from what we hear, we believe that many able operators are now of opinion that in certain cases it is the operation of election, but it is by no means agreed that it is to be done in all cases of cataract. Cataracts differ as patients differ, and it is too much to expect one special operation to suit all or even a majority of cases.

Beri-beri is a subject which has received much attention, and it looks as if clear views on this long mysterious disease were about to emerge. The valuable Memoir of Sir David Semple on Tetanus and Quinine has given rise to much discussion, and we welcomed especially Sir D. Semple's reply to criticism which we published in our December issue.

Plague has prevailed extensively and we see no certain signs of its waning, even after our bitter experience of fifteen years

Cholera has prevailed as usual in many places, but not in any virulent epidemic form

The opening in Calcutta of the luxurious surgical block called the Prince of Wales Hospital, the opening of the great Civil General Hospital at Rangoon and the completion of the new Medical College at Lucknow are events of no minor importance and have been duly chronicled

INDIAN MEDICAL SERVICE IN 1911

THERE have been a good many changes in the conditions of service in the I M S during the past year, and it can scarcely be denied that these changes have been in the direction of improvement. The two which most affect the service as a whole are the adoption of graded pensions and the new rules governing accelerated promotion.

1 The adoption of graded pensions in the Indian army was followed by an extension of the system to the I M S, and the rules were published in June. The original landmarks have been retained, *i.e.*, there is no alteration in the amounts of pension carried at 17, 20, 25, 26½ and 30 years respectively, but for intermediate years there is a progressive increase by amounts of £20 or £40. It will be interesting to observe what the effect of the new system will be on the numbers of retirements, judging by the very small number of officers who have availed themselves of the £600 pension introduced a few years ago it is quite possible the effect will be extremely small, this, we understand, has proved to be the case in the Indian army. It is possible the fact of being able to go at 29 years on £660 may induce a few men who have entered the service late to send in their papers, on the other hand, it will probably be found in practice that the possibility of earning an extra £20 or £40 will tempt men to stay on from year to year. However, time will show. The average number of casualties in the service for the past fifteen years has been 30 annually, during the year 1911 the actual number has been 28, including five from death.

2 The new rules regarding accelerated promotion are a very great boon to many men. Prior to their introduction no officer could hope to obtain this coveted six months unless

he had completed the necessary course of study between the end of his third and of his twelfth year's service. The margin appears a wide one at first sight, but in practice many men failed to qualify themselves in time. The difficulty was that a man who was keen on civil employ might find he could not risk going home between his fifth and seventh years for fear of being superseded by his juniors, when in civil, he would normally wait until he had at least three years to his credit and was thus eligible for leave under Civil Leave Rules; and, even then, he might put off going home, in order to hold some special appointment. Whatever the reason, the fact remains that a considerable number of men who were keen enough to study found it impossible to get home in time to qualify. To such men the new rules are of great value. An officer can now qualify up to the end of his 16 years of service, provided he shows he could not manage to do so before being normally promoted to Major, if he qualifies, he resumes his position in the Army List with others of his batch who were accelerated in the ordinary way, though without drawing the difference in pay for six months.

3 The question of extensions of service to complete 30 years for pension has evidently been under consideration, as the Secretary of State has recently decided to withdraw the concession in the case of all officers who joined the I M S. after 1st April 1911. The case for and against the grant of extensions is simple enough, the individual who entered late, *i.e.*, over 25 years of age, is benefitted at the expense of the rest of the service, inasmuch as, though not eligible for promotion to Colonel, he retains his position on the advanced list and keeps other officers off it, moreover, in civil employ at least, he usually retains a lien on one of the more valuable appointments. We regret the concession was not removed altogether, or rather limited to existing Lieutenant-Colonels.

4 The introduction of drill as one of the subjects for promotion to Captain has now begun to operate. There are many, no doubt, who regret the necessity for this departure, but it must be remembered that the purely military training of the Lieutenant on probation is now limited to the two months at Aldershot, as compared with the four months daily drill at Netley under the old régime. Moreover, it is absolutely essential, in

the interests of the service as a whole, that the idea that officers in the Sister service are "smarter" and more efficient in this respect should be disproved. The I M S Lieutenant now passes the same examination in drill as the Infantry Lieutenant of the Indian Army, plus the ordinary R A M C officer's course of special corps drill. As hitherto has proved the case, most of the failures in the Captain's promotion examination have been in Military Law.

5 The abolition of the old fee rules, and the substitution for them of the new ones notified in the *Gazette of India* (Medical No 100, 2nd February 1911) have caused general satisfaction.

6 Brevet promotions for distinguished service in peace have been granted to four officers, under para 9 of the Royal Warrant. This is a new and most welcome departure, and worthy of further extension.

7 It has been decided that the appointments of Honorary Surgeon and Honorary Physician to the King shall be restricted in future to officers on the active list and vacated on retirement, and the Royal Warrant has been amended accordingly.

8 Officers of the Assay Department who attain to the advanced list of Lieut-Colonels are now treated as supernumeraries on that list, this has enabled two more Lieut-Colonels to be advanced in their place.

Current Topics

KALA AZAR AND TROPICAL SORE

IN the *Quarterly Journal of Medicine* (Oxford Clarendon Press, October 1911), Sir Wm B Leishman, R A M C, has an article, or critical review of the subject of Kala Azar and Tropical Sore, which is as modest in his self-suppression as it is accurate and complete.

It is only eight years ago that the parasites known as Leishman-Donovan bodies, or Leishmania Donovan (Laveran) were discovered, but already it has been realised that Kala Azar is by no means limited to Assam or Madras but is widely spread in India, and a form of Kala Azar due to infection by parasites of the Leishmania group is more or less frequent in Italy, Greece, Portugal and other countries bordering the Mediterranean.

It is, says Sir Wm Leishman, "extremely improbable" that tropical sore and Kala Azar, the one a generalised infection and the other

a localised cutaneous disease, are due to one and the same parasite, but it is a fact that the two parasites are "indistinguishable morphologically," therefore in the present article three diseases are discussed, viz, Indian Kala Azar, due to *L. Donovan*, infantine Kala Azar, due to *L. infantum*, and Tropical Sore, due to *L. tropica* (Wright).

In India the disease Kala Azar is well known in Assam, Bengal and Madras (in the latter city it is well known that Major Donovan, I M S, discovered the parasite). Cases of Kala Azar have been reported in Syria, Ceylon, Burma, Indo-China, the Sudan, the Dutch East Indies, and there are several endemic foci in the Yangtse valley in China.

We have not space to follow Sir William Leishman in his valuable critical summary of our knowledge of the morphology and cultural forms of the parasites. As regards treatment, the one certain fact is in the cases where improvement or recovery followed any line of treatment a polynuclear leucocytosis has been one of the features (Mun, I M G, 1911, p. 58).

As to the ætiology of the disease, since Nicolle and his colleagues have shown clearly that *L. infantum* is a natural disease of dogs, and others have shown that this parasite is transmitted from dog to dog and from dog to man by the agency of the dog-flea (*Pulex serripes*), it behoves all workers on Indian Kala Azar to follow up this clue, and Sir Wm Leishman does not consider the negative results arrived at by Patton, Donovan and Christophers to be sufficient to permit of definite conclusions.

Infantile Kala Azar due to *L. infantum* (Nicolle) was first recognised by Pissone and Cathone in Italy and by Nicolle in Tunis. In Italy a form of splenic anemia had long been recognised, but the giant's share of the work has been done by Nicolle and his colleagues in the Pasteur Institute at Tunis. There is, therefore, no doubt that a form of Kala Azar is widespread on both shores of the Mediterranean and in the Sudan and Abyssinia. Syria is heavily affected, and in the Sudan and Abyssinia the disease conforms more closely to the Indian type.

The principal points of difference between the Indian and the Mediterranean types are as follows—(1) The infantile form attacks almost exclusively young children, while the Indian form is found at all ages. (2) Certain differences of symptomatology have been described. (3) In the case of *L. infantum* cultures are readily obtainable upon Novy-McNeal medium, and subcultures are obtained in the case of *L. Donovan* cultures on this medium are, as a rule, unsuccessful and subcultures cannot be made. (4) Inoculation of the spleen parasites into dogs and monkeys reproduces the disease in the case of *L. infantum* and fails in *L. Donovan*. (5) A spontaneous infection of dogs

has been found in the endemic areas of *L. infantum*, but no such infection of dogs has been found in India. The infection, however, in dogs needs a wide examination of such animals, as the infection has been found to vary from 16 per cent of dogs examined to as many as 27 cases out of 33 dogs examined in Sicily (Gabbì and Basili).

There is also a very close correspondence, if not absolute identity, between the infantile and Indian forms as regards the distribution of the parasite in the body.

We have not space to follow Sir Wm Leishman's interesting summary of the experiments of Dr. Basili on the transmission of the infection from dog to dog by means of the dog-flea. In July last it was also demonstrated that dogs could be infected at a distance by the bites of fleas collected in a house in which there was a case of Kala Azar. It is suggested that the infection is actually transmitted by scratching the part bitten by the flea in the same way as it is thought plague is transmitted by the flea.

The question of dog infection in India is one which requires further investigation evidently.

The third disease due to Leishmania parasite is what is called by various names, but perhaps best by the name tropical sore. These sores have been long known to tropical physicians, but the easy demonstration of the parasite (*L. Tropica*) has led to their detection in many other countries, e.g., Central Asia, New Caledonia, Transcaucasia, Algiers, Northern Nigeria, Brazil, on the Amazon, Sao Paulo, Trinidad, the Canal Zone.

Row's work in Bombay which incriminates the house-fly is commented upon, the bug, the phlebotomus, simulum and mosquitoes are all under suspicion.

We commend this valuable review of Sir Wm Leishman to our readers. It is most complete and the enormous literature which has grown up on the subject is well shown by the bibliography appended to the article which runs to five and a half large pages.

MOSQUITO PROOF SHIPS

ALTHOUGH many of us in India are much interested in ships and shipping, we have not yet reached the stage of demanding the mosquito-screening of ships. This is mainly because the chief mosquito-borne disease that we have to deal with is malaria and we are wont to take risks with regard to infection by that parasite, which we could not dare to do were the opening of the Panama Canal to introduce yellow fever into India.

In the Yellow Fever Bureau bulletin (No 6, October 1911) there is a useful article on this subject by Dr. W. Melville-Davison, the Medical Superintendent of the Booth Steamship Company.

He points out that in these days of rapid transit mosquitoes can be conveyed from an infected port and landed in another country in a vigorous and healthy condition. He points out that fumigation, especially with sulphur, has many drawbacks: the damage it causes to cargoes, furniture and fittings is enough to condemn it.

It is also necessary to see that lighters and other cargo tenders are free from mosquitoes, and this is an extremely difficult matter in practice.

On the steamship itself we have two problems, one to exclude the mosquitoes, and secondly, to prevent the breeding of any stray ones which may have gained access to the ship. Dr. Davison points out that there is very little protection afforded by a mosquito net over a bed but two feet wide and ventilation within the net is non-existent, a serious matter when the passenger has to sleep in a small cabin of about 30 cubic feet. Dr. Melville-Davison illustrates what he recommends for screening port-holes and it is simple, but then his remarks on the problem of the doors shows great difficulties to be overcome—

"The problem of the door is rather more complex, for this supplies a most important means of ingress to the insect, and is very likely to be left open, or at least to be insufficiently closed. Moreover, the storage of a large number of removable doors is a somewhat difficult problem in most steamships, where economy of space has to be considered.

In order to lessen the danger of doors left open, it is essential to provide, as far as possible, a system of double doors, so that the intervening space may receive any mosquitos which enter from the outside, the second door effectually preventing their penetrating into the living quarters. With a steamship there are many limitations. Sliding doors are always inefficient, the movement of the ship frequently causes them to jam, however great care is taken, therefore, this class of door, except in very rare instances, must not be used. Again, it is always very necessary that all mosquito doors should open outwards. The reason for this is obvious. If a door open inwards, any insect resting on the panel is taken into the room, if the door open outwards, it is thrown into the passage. Unfortunately, with rooms opening into a central fore-and-aft alleyway, it is not always possible to open the door outwards. It is, I believe, a maxim in shipbuilding that no door must open against the camber of the ship, if it is possible to avoid it. This is a very unfortunate rule, as a large proportion of rooms open into the central fore-and-aft alleyways. Moreover, the danger of a door opening into an alleyway is obvious. All athwartship doors, therefore, not being included in this rule, can, and ought to be made to open outwards. To facilitate the closing, each door must be fitted with a strong spring and spring catch, the one to close it and the other to keep it closed."

The following remarks on the wire gauze are of interest—

Now comes the question of the gauze wire to be used. Many varieties have been tried—ordinary copper wire, nickel, steel and bronze—all of which have proved unsatisfactory. They oxidize easily, and soon weaken and become old. It must always be borne in mind that the sea air is much more destructive to copper and steel than the air on shore. Again, salt water coming into contact with them works great havoc, particularly on steel and copper.

Nickel appears to possess many advantages, but the cost is absolutely prohibitive

After exhaustive experiments with various metals, it has been decided that oxidized phosphor bronze is undoubtedly the best for the wire. It stands the sea air admirably, and will bear immersion in salt water longer than any other material. It is quite cheap to manufacture, easy to use, and will stand a great deal of rough handling.*

The mesh which I advocate as giving at the same time the greatest strength, and allowing the most air to pass through, is 16 x 16 per inch, made of 26 S W G wire, crinkled in the warp and in the weft, which prevents the strain from spreading, and keeps the mesh always regular (or the mesh may be somewhat larger, 14 x 14)

The following practical experience is worthy of record —

"The town of Porto Velho, at the head of this river, is the terminus of a railway now being constructed into Bolivia

As far as I have been able to ascertain, no sea going ship has ever navigated that river and run in the port, without the bulk of the crew contracting malaria of a malignant type

Even the river steamers, manned as they are by native crews more or less immune, rarely escape infection. Yet the SS 'Vincent' the first mosquito proof ship built, manned by a crew of Europeans who had never had malaria or yellow fever, made two voyages up this river was moored alongside the wharf at Porto Velho, without at any time showing signs of mosquito borne disease

As a matter of fact, not one man was off duty for even half an hour with sickness of any kind, during the voyage, which I think, may be taken as an excellent example of the efficiency of mosquito screening in ships navigating tropical rivers

In the Booth Steamship Company, at least, it has passed its experimental stage, and has been well received by the ships' crews, and, with few exceptions, much appreciated

Bearing all this in mind, I consider the time has arrived when the antiquated fumigation regulations against yellow fever ought to be withdrawn, or at least amended to such an extent that ships efficiently screened on the lines I have laid down should be exempt from the regulations which would be in force against ships not so protected

Could shipowners be assured that their cargoes and fittings would not be ruined by sulphur fumigation, and that their passengers would in future be subjected to no inconvenience and delay from quarantine (if there was no sickness on board), I feel sure that, not only on humanitarian, but also on commercial grounds, the practice of screening ships against mosquitoes would be come universal

Twenty ships of the Booth Line are now so fitted. The cost is 10s for each porthole, 10s for each covered door and 30s for each constructed door

During the 18 months this system has been in force, not one single case of disease attributable to mosquitoes has occurred on any screened ship

This is eminently satisfactory and shows what can be done when it is necessary to protect against such a formidable disease as yellow fever

* This wire gauze is manufactured by Messrs George Christie, Limited, Ladywell Wire Works, Govan, Glasgow

THE TUBERCULIN TREATMENT OF TUBERCULOSIS

This subject has been under discussion in India, so we here reproduce the conclusions of Dr H Vallow, the Resident Medical Officer of the Leeds Sanatorium for Consumptives (*Practitioner*, November 1911)

He cannot regard "tuberculin in the form of a bacillary emulsion as a cure in every case," it has its place, but "that is not the first place." He thinks better results are obtained with tuberculin when a one per cent solution of carbolic acid in sterilised water is used as a diluent

His conclusions are as follows —

1 Early cases do very well treated on the ordinary Sanatorium lines and injections of carbolic acid

2 In early cases treated on the ordinary Sanatorium lines and tuberculin injections using Saline as diluent, the results are not so good as when carbolic acid is given

3 In early cases treated on Sanatorium lines and tuberculin injections, using a one per cent solution of carbolic acid as diluent, the results are equal to those obtained by using carbolic acid injections

4 In later cases carbolic acid by itself appears to be of no value, with a few exceptions, with these cases tuberculin undoubtedly gives the best results

5 Tuberculin is the only drug which I have known to reduce the temperature in pulmonary tuberculosis

Dr Vallow, therefore, thinks that tuberculin "plays an important part in the treatment of pulmonary tuberculosis in certain cases, and that its efficacy is greatly increased when it is diluted with a one per cent solution of carbolic acid, but it cannot take the place of sanatoria. Too much value is placed on tuberculin by tuberculin enthusiasts"

AMCEBIC DYSENTERY

We have received a reprint of a paper by Dr W E Deeks, Chief of the Medical Clinic, Ancon, in the Canal Zone on the subject of amebic dysentery which is worth referring to as it shows what is there understood to be dysentery due to the amœba, known as *Entamoeba histolytica* of Schaudinn. We cannot here more than give a few extracts from this pamphlet

As to the source of the infection Dr Deeks writes —

"Writers on the subject claim that there are two means by which infection occurs—through water and through uncooked vegetables. While we are inclined to the belief that it is possible to infect through uncooked vegetables, our experience here would indicate that water infection is the chief, if not the only source. A child eighteen months of age suffering from a characteristic attack, came under the observation of one of us (W E D). This child had never had any

nourishment but sterile milk. It drank freely, however, of water, from the house cistern from which the infection probably came. Since the water system has been installed, and good water supplied to the Zone and Panama, the sick rate for this affection has greatly lessened, though green vegetables from local gardens are much more consumed than formerly. We are inclined to the belief that the infection is in the cisterns and quite shady streams where other genera of harmless amoebae flourish and rarely, if ever infection occurs through uncooked vegetables and fruits. If then the infection takes place through water, is it not reasonable to assume that serious epidemics would probably occur, as many people drink from the same infected source?"

As to the seasonal variation, it is always in evidence in the Canal Zone, but present chiefly in March, April and May. Race is said to have no rôle in the ætiology, nor has age, occupation or length of residence. The drinking of the contaminated water containing the organism is the cause.

As to the type of the disease, Dr. Deeks writes —

"The dysenteric forms of amoebic colitis are acute and chronic. In the former the symptoms are mild or fulminating in character. In the mild types the stools are from 4 to 12 in 24 hours. There is little prostration, practically no fever, and tenesmus only if there are lesions in the rectum. There is loss of appetite with coated tongue. These cases yield readily to treatment. The lesions have not penetrated beyond the submucosa, and the ulcers are very little undermined. The tenderness over the lesions is a striking feature, however.

The severity of the milder types passes gradually, into the grave or fulminating types, where the prostration and distress may be choleraic in character and the tenesmus almost constant. In these cases the dejecta for the most part consists of necrotic mucous membrane, pus and blood streaked mucus, in which the specific organisms are numerous. The temperature in uncomplicated cases is never high, even in these severe cases seldom reaching 102°. It generally ranges from 99° to 101°. This axiom may be formulated, that fever of more than 100° or 101° is not characteristic of uncomplicated amoebic colitis. In the chronic cases, which may persist for years, the dysenteric symptoms are generally present, with periods of exacerbations and remissions. There are digestive disturbances and generally considerable emaciation. The tongue is heavily coated and the myxenoid or doughy skin is present to a marked degree, also the tenderness over the colon. The patients are frequently anæmic and mentally depressed. The fever is slight and irregular, and the pulse small and compressible. Leucocytosis is variable, and the polynuclears are increased, but they are not characteristic features and depend upon the amount of confined suppuration present in the bowel. For example, in an uncomplicated case, four leucocyte counts varied from 9,000 to 33,000, in another, in three counts, from 6,500 to 8,600, and in a third, in six counts, from 9,000 to 24,200. In apparently uncomplicated cases we have had leucocyte counts varying from 3,200 to 39,000. Such variation precludes the possibility of leucocyte estimations being of any value in a differential diagnosis."

On the subject of Treatment Dr. Deeks says that "ipecacuanha is the standard treatment in most countries," but it is not believed in the Canal Zone. Dr. Deeks has written —

"Absolute rest is enjoined, and absolute milk diet, of which there should be an abundance, saline or water irrigations, and bismuth subnitrate in heroic doses. We do not object at the beginning if tenesmus and distress

be very severe to an occasional hypodermic of morphia and atropin, but as a routine measure it is not considered good treatment."

The following is Dr. Deeks' defence of his heroic dosage of subnitrate of bismuth which, though often used in India, has no special reputation —

"It is with a consideration of these conditions that we advocate, after a preliminary dosage of castor oil, the following. First, rest in order to increase the patient's resistance and give the minimum of movement to the bowel. This is classical treatment in all acute infections. Second, a generous milk diet, because it is a physiological, nutritious diet admits of a minimum of intestinal putrefaction, and is practically all absorbed before it reaches the large bowel, which, owing to its ulcerative condition, is physiologically inert. Third, saline or plain water irrigations, one to three daily, purely for the purposes of lavage, in order to rid the bowel of toxic products. Fourth the administration of bismuth subnitrate in heroic dosage. We give a heaped teaspoonful, equivalent to about 180 grains by weight, mechanically suspended in almost a tumbler of plain, or, better, effervescent water, every three hours, night and day, in severe cases, only lessening the amount when improvement takes place. The mechanical suspension in a large amount of water is essential, otherwise it is prone to form a paste and ball up, thus losing its physiological effect."

How does bismuth subnitrate act?

In 1883 Theodor Kocher demonstrated that the insoluble preparations of bismuth were actively antiseptic. It is further known that, on the mucous membrane of the bowel, they have a local sedative and astringent action. To its antiseptic property undoubtedly its value is due, not because of its direct action on the amoebae themselves, but on the associated putrefactive symbiotic organisms, that are known to be essential for their growth. That the bismuth does not kill the amoebae is shown in some observations in Ancon Hospital by Drs. R. C. Conner and W. G. F. Baetz. They observed the bismuth crystals within the protoplasm of the active amoebae, without apparently doing them any harm. That bismuth subnitrate, on the other hand, does kill the putrefactive bacteria, and, secondly, the amoebae, is evidenced by the facts that in a very few days (three to six) the stools become black and odorless and the amoebae disappear from the stools. We have been unable to find them after the fourth day, though Drs. Conner, Baetz and H. R. Carter, Jr., have repeatedly sought for them.

During the passage of the bismuth subnitrate through the large bowel it becomes converted into sulphid. The nascent sulphur with which it unites, is a derivative of the proteids through the action of putrefactive bacteria. When the putrefactive bacteria are destroyed, and no sulphur is further generated, the bismuth subnitrate passes through the bowel white and unchanged. This happens in from ten days to three weeks after the beginning of the administration of the bismuth salt in the above-mentioned dosage. It proves that the bowel can be rendered antiseptic as far as the putrefactive bacteria are concerned, and even indican disappears from the urine. The disappearance of the amoebae from the stools does not mean that they are all destroyed in the infected tissues, but that when they have escaped into the lumen of the bowel the conditions there are incompatible with their existence. As the absence, then, of amoebae in the stools is no evidence of their destruction, what evidence have we to show that the patient is cured? Only this: the complete convalescence of the patient, as indicated by the clean tongue, the restored appetite, the disappearance of the irregular temperature, tenderness over the bowel, and myxenoid

skin, and the gain in weight. During convalescence other tonics may be indicated.*

It seems to us that the cases here referred to would have recovered equally rapidly and well, if not more rapidly under the sulphate of soda saline treatment. In the treatment of dysentery prompt recognition of the disease, rest in bed, low diet, and salines are essential. In India salines are supposed to be of special value in bacillary disease, but we hear of no mention of that form of dysentery in Dr. Deeks' clinic in the Canal Zone.

SURGICAL FORMULÆ

We quote a few very useful formulæ from an article by Dr. Moschcowitz, of the Mt Sinai Hospital, New York, which has recently appeared in the *American Journal of Surgery* (October 1911)

CHROMICIZED CATGUT

Sizes 0 and 1

- 1 Place for 24 hours in 95% alcohol
- 2 Allow to dry by spreading on a sterile towel
- 3 Place for 30 hours in the following chromicizing solution —

R Potassium Bichromate	50
Carbolic Acid	1250
Distilled Water	25000

- 4 Remove with sterile forceps, and allow to dry slightly by spreading on a sterile towel
- 5 Place for six days in 1 to 500 alcoholic bichloride of mercury solution
- 6 Remove with sterile forceps and preserve in 95% alcohol

Sizes 2 and 3

- 1 Place for 24 hours in 95% alcohol
- 2 Allow to dry by spreading on a sterile towel
- 3 Place for three days in the chromicizing solution. (Formula given above)
- 4 Remove with sterile forceps and allow to dry slightly by spreading on a sterile towel
- 5 Place for six days in 1 to 500 alcoholic bichloride of mercury solution
- 6 Remove with sterile forceps and preserve in 95% alcohol

IODINE CATGUT

Moschcowitz (*Annals of Surgery* January, 1911)
(See General Directions)

- 1 Place for five days in the following solution —
- | | |
|-----------------|-------|
| Iodine Crystals | 500 |
| Alcohol 95% | 10000 |

(Shake frequently until dissolved)

- 2 Remove with sterile forceps, and allow to dry by spreading on a sterile towel, covered by a sterile towel
- 3 Preserve dry in a sterile glass vessel

TALCUM POWDER

Place in tin sugar shakers, wrap in heavy muslin, cover and sterilize in the autoclave for 30 minutes at 15 lbs

(Note—To prevent caking, remove the talcum powder at once from the autoclave)

* In the same Journal (*New Orleans M & S Journal*) we observe that Drs. Biern and Zoller are not in favour of bismuth, it has little advantage over rest and diet only, and ipecac has given good results in their hands. We are still ignorant of dysentery

GLOVES

- 1 Wash with cold water to wash away blood, pus, etc
- 2 Wash with hot water
- 3 Dry in a warm place (we use our blanket heaters) spread out flat
- 4 Turn inside out, and dry again
- 5 Examine for holes and repair these in the following manner: Clean the area to be patched with benzine, and stick on a rubber patch with India rubber cement (Goodyear India Rubber Glove Mfg Co, 503 5 Broadway, New York City)
- 6 Powder with talcum powder inside and outside. Turn tops back for about two inches. Fold into heavy muslin covers, made for that purpose. Finally seven pairs of gloves are folded into one outside muslin cover
- 7 Sterilize in the following manner: Start autoclave and wait until a pressure of 15 lbs is reached. Put in the glove and sterilize for 15 minutes at 15 lbs. Let the steam escape and take the gloves out immediately

If any articles, such as towels or gloves, are known to have been soiled with pus, for example at an unclean operation, it is always wisest and safest to attend to their sterilization promptly, by boiling them. Fifteen minutes in slightly alkaline or 25 minutes in plain water is adequate. When wanted again for operation these articles can be re-sterilized by steam under pressure in the usual manner, and a transference of pathogenic germs from one case to the other need not be feared. The initial boiling is resorted to in such cases because boiling is the simplest and most reliable of all methods of sterilization.

The greatest scruple is necessary in case of the rubber gloves because they come into the most intimate contact with the wound. A gauze drain is put into each glove so as to keep it from collapsing. As a rule, alkaline solutions are more apt to destroy the elasticity of the rubber gloves than plain water, but if time is a factor, instead of using plain water, gloves may be boiled from 10 to 15 minutes in a 1—1000 aqueous solution of sodium hydrate (NaOH), in fact, this may be done a number of times before their texture is materially impaired and the gloves become brittle and lose their elasticity. Ordinarily gloves are boiled in plain water from 20 to 25 minutes. After boiling they are at once thoroughly dried and powdered and are then ready for re-sterilization by steam under pressure. In making rounds through the hospitals a remarkable diversity of opinion can be gathered on this subject. There seems, however, no tenable reason why rubber gloves should not be re-sterilized by steam under pressure in the same manner as the operating room wash and wound dressings. Of course, during the steam sterilization, just as during sterilization by boiling, it is important that a gauze drain be placed into each glove so that the circulating steam can have access to its interior. Furthermore stickiness or adhesion of the gloves is entirely obviated if the surfaces have been well powdered before they are subjected to the superheated vapour.

In substituting one method for the other the comparative time required for sufficient sterilization must be borne in mind. It is indicated in the following table —

Boil in alkaline water (104° C)	5—10—15 minutes
Boil in plain water (100° C)	20—25 minutes
Steam at 250° F (121° C)	35 minutes
Steam at 212° F (100° C)	45 minutes

With regard to the size of the parcels and the manner of packing the sterilizer, there are a few points which are of practical importance. The sterilizer should not be packed too tightly if the steam shall circulate freely between the parcels.

The nurse's list of supplies for one laparotomy

- 3-6 head covers and gowns for doctors and nurses
- 7-9 pairs of rubber gloves and 2-4 pairs of half gloves
- 1 laparotomy sheet
- 2 dozen towels
- 2 covers for the supply table
- $\frac{1}{2}$ gross of gauze sponges
- 2 dozen gauze tampons
- 2 dozen abdominal pads
- 1 parcel scrubbing gauze
- 1 parcel dressing gauze

To a certain degree the operating room nurse may exercise her natural inventiveness in the get up of this stock of supplies for an operation, but she should never allow *variety in design* to impair the *utility* of an innovation, in general, in the pursuit of asepsis it is not complexity and multiplicity, but *simplicity and uniformity that are most desirable*

REMEDIES FOR ANIMAL PARASITES

DR W H SCHULTZ, of Washington, has a practical article (*J A M A*, September 30th, 1911) on the value of various remedies for the expulsion of animal parasites from the intestines and especially with regard to the ankylostoma parasite

Thymol is the recognised remedy and Dr Schultz agrees as to its great value, but points out the drawback, that it is certainly irritating and even toxic when absorbed. The Pan American Commission recommended its use in doses per age groups, from $7\frac{1}{2}$ grains to a child under 5 years to 45 grains for a youth of 15 to 19 years, 60 grains for an adult and only thirty for old persons over 60 years, two doses to be given, the second at an interval of several days.

Beta-naphthol is also well reputed, it is weaker than thymol and the cure is therefore slower.

The patient is placed on a liquid diet, at 3 p m a mild cathartic of calomel or salts is given. On the second day at 7 a m 1 to 2 gm of beta naphthol, mixed with about one third its weight of milk sugar, is given in a gelatin capsule, at 8 a m 1 to 2 gm more are given, at 11 a m a vigorous cathartic of salts or compound cathartic pill, at 12 a glass of milk and bread may be eaten, and after that the regular diet (Clayton, Fort)

On the use of malefern Dr Schultz writes as follows—

"In treating hookworm disease by malefern it is not only essential to have a fresh ether extract, but it is necessary to prepare the alimentary tract for its reception. The mucosa should be free from mucus and from fatty foods. All solvents of malefern such as alcohol, fats, and oils, must be avoided, just as with thymol. Then in order to avoid unnecessary absorption after the drug has fulfilled its function of poisoning the parasite, it should be expelled as quickly as possible. Compound cathartic pills or magnesium sulphate seem to be the best cathartics. Since ether extract of malefern has a very disagreeable taste, it ought to be put up in capsules. Glutinous capsules have been recommended, but when taken in these, larger doses seem to be necessary. The following procedure used in part by Goldman seems to be a good one.

For a vigorous adult 8 to 16 gm of ether extract of malefern is put up in 1 gm gelatin capsules. First day Evening meal of meat broth or light soup, compound cathartic pill later, say about 8 p m. Second day 7 a m 1 gm malefern every ten minutes until 4 to 8 gm have been taken. One-half hour is then allowed to

elapse and if no undesirable symptoms develop, the remaining 4 to 8 gm are taken, 1 gm every five minutes. One to two hours later a vigorous purge is taken (calomel or salts). The feces should be washed and the worms counted, three to ten days later the feces are again examined for eggs, and if necessary the treatment repeated.

Another popular mixture is that of Eucalyptus and chloroform, 3 grammes of chloroform, 2 grammes of Eucalyptus and 40 grammes of castor oil, this is known as Hermann's Mixture. This amount is divided into two doses and given at hour intervals.

"In conclusion it may be said that at present thymol is one of the most toxic vermicides for ankylostoma thus far proposed. It is easy to obtain, keeps well, is cheap, and is easily administered, it kills the parasites instead of merely paralyzing them. When taken under the care of a physician who is careful to gauge the dose in accordance with the physical condition of the host, it seems to be the best all around remedy thus far studied. While dangerous in large doses, it differs from beta naphthol, malefern, and chloroform, in that the danger is at once apparent and can be controlled by heart stimulants and by methods that help maintain a good blood pressure until the drug has killed the parasite and the cathartic has removed the excess of thymol. Whereas, with the other remedies just mentioned the danger signals are less obvious and usually it is only after irreparable damage is done that one is aware that his patient is in danger of any after effects.

Beta-naphthol is probably the next pure chemical substance that ought to be tried more extensively on human hookworm subjects. Persons affected with kidney lesions ought not to take it, and when used, the urine should be examined to determine whether it causes albuminuria. If the maximum dosage of 2 to 4 gm divided in two parts and given an hour apart, does not cause renal disturbances in adults, beta-naphthol has much to recommend it as a hookworm remedy.

Malefern at present has not much promise in this country because of the lack of care in collecting the rhizome and in preparing an active ethereal extract. This, however, is a condition which doubtless would soon be remedied if once considerable demand existed for an active-extract.

At present there is but little reliable data on how efficient "Hermann's Mixture" is for expelling human hookworms, or what percentage of cases might show after effects. It seems unnecessary to add such an irritating oil as eucalyptus globulus, and if chloroform is used, it ought to be given with plenty of oil. It is best to divide the maximum 3 cc dose for a vigorous adult, into 3 parts, 1 cc of chloroform to 10 cc of castor oil, given at hour intervals. Should vomiting occur before the chloroform is taken, stop the treatment and if necessary change to thymol or beta naphthol. By thus regulating the dose of chloroform I have had excellent results with dogs, it has proven rapid in its action and thus far not followed by any evil after-effects. Should the chloroform-castor oil mixture act as favorably in human beings as it has for me in dogs, it will prove a universal worm remedy of great importance.

Finally it may be said that the best of remedies are but weak instruments of defence in stamping out this degrading disease. The weapon of offence must after all be proper disposal of fecal matter so that infection is rendered impossible. And what can be more effective in accomplishing this than the cultivation of a healthy public sentiment which will insist on its communal rights in this matter, protect the innocent, and by proper police regulation quickly punish the offender? To this end it would seem that the most effective line of attack is that led by Stiles and others who are endeavouring to educate the masses as to the importance of proper sanitation."

MEDITERRANEAN FEVER IN TEXAS

LIEUTENANTS E. R. GENTRY, M.D., and T. L. Ferenbaugh, M.D., of the Medical Corps, U. S. Army, have a valuable article, in the *Journal, American Medical Association* (September 23rd, 1911) on the distribution of Malta fever in Texas. They conclude that —

(1) Malta fever is endemic throughout the older goat-raising sections of Texas

(2) Many cases considered to be a typical typhoid are really Malta fever

(3) All cases found have occurred in territory devoted to goat-raising, and all patients either gave a history of drinking unboiled goat's milk or were actively connected with the goat-raising industry

(4) "While we have not yet found the *M. melitensis* in the milk of goats, the positive serum test in 34 per cent of goats examined points strongly to this animal as the source of infection"

DR ASHBURTON THOMPSON sends us a copy of his 20th report on leprosy in New South Wales, which gives fully detailed accounts of several cases

Since 1883 there have been 121 cases under observation in New South Wales, of which 51 have been "whites of European descent" and 70 coloured patients, chiefly Chinese and from the Pacific Islands. They are segregated in lazarets in Little Bay and very well looked after. We note that the medical men in charge are not fond of Naxin and seem to use chiefly gynocardate of magnesia, and also *Chaumugia seeds*

THE Sleeping Sickness Bureau have published a very complete *List of References to Kala Azar* in the form of a Bulletin. It consists of references to no less than 900 articles on Kala Azar and other allied Leishmania infections

IN the *Lancet* for November 4th, 1911, there is a paper by Prof. Giuseppe Franchini on the development of the Leishman-Donovan bodies in the intestinal tract of the anopheles. He is somewhat vague as to the species of anopheles used in his experiment, but mentions the "Claviger variety" obtained in the malarial zone of the province of Ferrara and near Bologna, Italy. The matter is one for further research.

IN the *Lancet* (November 4th) Capt. V. Nesfield, I.M.S., F.R.C.S., has a useful critical article on the immediate incision of the swollen glands in plague, which he claims as most useful as it sets free toxins and bacilli. We would welcome a discussion on this very practical matter.

FROM 1st January 1912 it is stated that the P & O Company, in addition to paying their Surgeons £10 a month, will permit them to charge a fixed fee for each consultation with

first and second class passengers. We are anxious to see how this new departure will work. It will not tend to make the P & O more popular with passengers.

IN *The Ophthalmoscope* (November, No. 11) will be found an interesting discussion on Lt-Col H. Herbert's operation, called "small flap sclerotomy," which was very well received in a discussion on the subject by Messrs. Treacher, Collins, Mayon, Laws and Ridley. The same Journal has a review of the literature of Major Elliot's operation of simple trephining for glaucoma, which is now apparently to be known as the "Feigens-Elliot operation for Glaucoma."

We note, not without some satisfaction, that further correspondence on the subject of Smith's operation has now alighted on the purely specialists' journals, and in recent issues Major Elliot and Dr. Vail have had much to say. In *Ophthalmology* (October 1911) will also be found several articles on cataract and a review of the literature by Lieutenant Colonel Maynard.

We have received (Dec. 20) an advance copy of the *Manual for the Indian Medical Service* by Majors Bruce Seton, and Jay Gould, I.M.S. It is full of valuable matter and should be in the hands of every I.M.S. officer. The publishers are Messrs. Thacker, Spink & Co., Calcutta.

Reviews

Prevention of Disease and Inefficiency (with special reference to Indian Frontier Warfare) — By Lt-Col P. HEHR, M.D., F.R.C.S. (Ed.), I.M.S.

THIS is the Second Edition of Lt-Col Hehr's book and is prefaced by a note from Sir O'Moore Creagh, the Commander-in-Chief in India.

It is far and away the most useful book on Indian Military Hygiene that we have ever read and should be in the hands of all Medical Officers of the Army.

It is so complete and thorough that it is difficult to give a full account of it, but in order that our readers may learn what a valuable book this is, we may briefly indicate its contents.

The Introduction, 40 pages, is devoted to the physical geography of India, weather, extremes of cold and heat, acclimatisation, the advantages of education in military hygiene, statistics of disease in peace and war. Part I commences by chapters on recruiting and physical training, and has another on making and "fitness for service." The second part deals with general hygiene, water, diseases produced by water purification, air and ventilation, food and cooking are ably and fully discussed. The chapters on barracks and on their sanitation are admirable,

and a very useful section is devoted to sanitation in cantonments. Camps, tents, camp kitchens, camp latrines, etc., are all dealt with. The chapters on personal hygiene, care of skin, feet, and on clothing are practical.

The fourth part deals with the prevention of disease in war and in peace and with the chief diseases. The sections on medical statistics and on the sanitary service in frontier warfare are excellent, and the book ends with a valuable appendix on statistics of disease and wounds in various wars large and small, since the Black Mountain Expedition of 1888.

The book is fully illustrated, having 87 illustrations. It is well printed and free use made of small type.

We can confidently commend this volume to all our readers in military employ.

Rose and Carless' Surgery—Eighth Edition, revised by A. CARLESS, F.R.C.S., Baillière, Tindall & Cox, 1911. Price, 2s. net.

FOR a book to have passed into eight editions not to speak of American reprints and translations into Czech and Chinese is more than enough to stamp it as a success, and since the first edition in 1898 Rose and Carless' Surgery has ever been a success with students. Since the last edition Prof. Rose has passed away, and Mr. Carless brings out the edition himself.

The new edition has been revised and brought up to-date and several sections re-written. We can again confidently recommend the book to students, it is as sound, reliable, practical and up-to-date as of yore.

Gould's Pocket Medical Dictionary—Sixth Edition. London, 1911. H. K. Lewis.

THIS is an altogether admirable little book, handy and convenient and reliable. We are not enamoured of the American spelling, but this affects but few words and those least likely to be looked for in a dictionary. The present edition is the sixth and contains 34,000 words or 4,500 more than even the last edition. The phonetic pronunciations given are excellent and the explanations given clear and distinct. The little volume also contains numerous tables, dose list, weights and measures, thermometric scales. It is altogether an admirable and useful little book.

Dental Anæsthetics—By J. BOLAN and D. E. ALDERSON. Bristol: John Wright and Sons, Ltd., 1911.

THIS is an excellent little book on the use of anæsthetics in dentistry. It consists of 100 pages, divided into eight chapters, and fully and completely describes the various substances used in anæsthesia, the methods of administration. The last chapter deals with analgesia on the use of local anæsthetics, refrigeration infiltration, cocaine and its substitute analgesic mixtures. It is full of detail and can certainly be recommended.

The Deaf Child—By JAMES KERR LORE, M.D., Aural Surgeon, Glasgow Royal Infirmary, etc. Bristol: John Wright & Sons, Ltd., 1911.

THIS is, in the author's words, an attempt to introduce the scientific method into the study of deafness in children, to lay down a clinical basis for the application of educational methods, in other words, to foster the co-operation of the medical man and the educationalist in the treatment of deaf children, instead of leaving them almost entirely, as hitherto, to the latter. An important step in this direction is the more minute clinical examination of children with defective hearing and speech and the classification of them so that the method of teaching suitable to the degree of defect may be applied. At present many children for whom the oral method of teaching and residence in their own houses would be preferable, are, owing to want of such classification, kept and taught in institutions along with mentally defective deaf-mutes for whom the manual-alphabet method may be the only one possible. The latter should certainly be educated apart and kept in some sort of institution all their days, for two reasons: (1) they will never be self-supporting, and (2) if let out they will beget mentally defective children. With proper classification, and education of the classes separately, an extension of the oral system, thorough and unimixed oralism may be looked for, with an extension of the day school system, now working so well in London and elsewhere, and the restoration of most deaf children to family life.

Dr. Lore works out these views in very interesting chapters on (1) the physiology of the ear and the causes of deafness, (2) the operation of the language centres in normal and abnormal children, (3) deafness in the school child, (4) present condition of the education of the deaf, (5) on methods of education, (6) on the treatment of deaf children, and (7) on lip or speech reading. He gives three appendices on (a) the capacity of the deaf for higher education, (b) the condition of the eyes in the deaf child, and (c) stammering and cleft palate.

The book is an excellent manual for teachers and school doctors for whom it is intended. The chapter on the present condition of the education of the deaf contains a particularly interesting account of the author's visits to the chief schools for the education of the deaf in Germany, Austria, Denmark, Schleswig-Holstein, the United States of America, and in Great Britain and Ireland, undertaken as part of a research on deaf-mutism, under the auspices of the Carnegie Trustees.

Meningitis, Sinus Thrombosis and Abscess of Brain—By JOHN WYLLIE, M.D. (London). H. K. Lewis, 1911. Post 8vo, pp. x and 258. Price 6s. 6d. net.

THIS is a very interesting monograph on an important subject written by Dr. Wyllie of Hull.

It is written in the author's words, with a desire to place before the reader in a small volume a consideration of diseases which in their earlier stages of the exhibit a striking similarity of symptoms, and to differentiate them as far as may be possible. It is characterised by a very practical treatment of the subject and the quotation of some very interesting cases illustrating the points dealt with. The value and importance of lumbar puncture is emphasised throughout the work which ends with one appendix—very practical on lumbar puncture and its uses, and another on the nasal accessory sinuses, diseases of which play so important a part in the etiology of the complaints dealt with in the book. The work can be strongly recommended to both physicians and Surgeons as thoroughly up to date and full of valuable practical information.

The Errors of Accommodation and Refraction of the Eye and their Treatment—By ERNEST CLARK, M.D., B.S. Lond., F.R.C.S., Eng. Third Edition. London: Messrs. Baillière, Tindall & Cox, 1911. Pp. ix + 229. Cr. 8vo. Eighty-eight illustrations. 5s. net.

THIS little text-book has now reached a third edition. It is what it claims to be, a practical guide to refraction, and can be recommended to all beginning the study of refraction. It concludes with a series of useful illustrative cases and the vision tests for the Services.

A Practical Handbook of the Diseases of the Ear—By WILLIAM MILLIGAN, M.D., and WYATT WINGRAVE, M.D. Pp. 596. With 293 Illustrations and 6 Coloured Plates. London: Messrs. MacMillan & Co., 1911. 15s. net.

THE number of text-books on diseases of the ear has had many additions within the last few years. This comprehensive work of forty-four chapters is a notable addition to the list, written as it is in collaboration by the well-known Manchester aural surgeon and London aural pathologist. In range of subject and depth of exposition it rivals Politzer's classical work, but is much better illustrated than that treatise.

The anatomy of the different portions of the ear is placed at the beginning of the section dealing with the diseases of that portion instead of all anatomy and physiology being given at the beginning of the book as is usual. It is a more rational plan. Under the heading examination, in addition to the usual tests for hearing and examination of the middle ear, the exploration of the nose, naso-pharynx and pharynx are gone into in considerable detail, including a description with figures of Hay's pharyngoscope. There is an important and useful chapter on "cytological and bacteriological discharges from the ear," other special chapters of note are "ear affections in the course of typhoid and other specific fevers," "fatal hæmorrhage from the ear," "facial paralysis," "tinnitus", "aural disease and life insurance," and finally, the last five chapters on diseases of the nose and suppuration diseases of the nasal accessory sinuses. West and Waugh's operations of tonsillectomy are fully given and then importance dwelt upon.

The main chapters of the work are not referred to in detail as they are very very complete, well illustrated and thoroughly up-to-date.

The work will no doubt take its place with other medical classics, and we shall look forward in time to seeing new editions of it, in which a bibliography would be a welcome addition. Drs. Milligan and Wingrave are to be congratulated on producing a very fine treatise.

A Handbook of Medical Treatment.—By JAMES BURNET, M.D. Edinburgh. John Currie, 1911. Price 3s. 6d. net.

DR. JAMES BURNET is well known as the author of several useful pocket manuals or booklets, such as the "Pocket Clinical Guide," the "Pocket Dispenser," etc., and this little book will be found equally or more useful to the student or busy practitioners. Purely surgical and gynecological affections have been omitted, but as a pocket manual of therapeutics it is hard to beat. It is in alphabetical order, beginning with acne and ending with yellow fever. It is brief and severely practical, and prescriptions are given. We can recommend this useful little book.

Suggestive Therapeutics and Applied Hypnotism. By HENRY S. MUNRO, M.D., Omaha, Nebraska. Price \$4.

THIS book is well written and will be found of the utmost help to those who are making a serious study of hypnotism.

It presents many excellent features, chief among which are the details of the methods employed for inducing the hypnotic state, and many chapters on all the practical bearings of hypnotism on medicine.

Thus the third edition of the book is brought well up to date, and introduces a description of the various measures allied to hypnotism that the medical man can bring to his aid in the treatment of almost all diseases. There is no more interesting subject in this connection than the new psycho-analytical form of therapy connected with the name of Freud, which has produced such marvellous results in some of the most distressing forms of mental disturbances and which is fully described in the text.

One might take exception to some of the author's experiments, such as those detailed on pages 80, 93 and 221, as they go outside the legitimate bounds of a medical man's work, and are not devoid of risk as the author states.

The book may altogether be considered the most up-to-date treatise in suggestive therapeutics in the English language at present.

Health to Date—By W T FLRMIL, M D Bristol
John Wright & Sons, Ltd

THIS is a quaint book, written by Dr Ferrie, author of books on herbal and animal simples. It is undoubtedly interesting, but it is impossible to make out whether it is written for the layman or for the physician.

The subjects dealt with are various, soured milk, whey, milk, diet and age, fish, poultry and game, meat and vegetarian diet, bread, tea, coffee, drugs, organo-therapy, Weir-Mitchell treatment, hygienic clothing, vinegar cure, sleep, palmistry and hypnotism. The book is written in a familiar style, bristling with poetical quotations from Shakespeare's plays to Alice in Wonderland.

It is, as we have said, interesting and suggestive, and many will read its various chapters with pleasure.

SPECIAL ARTICLE

THE BOMBAY SANITARY CONFERENCE

A CONFERENCE of Medical and Sanitary Officers from all parts of India assembled in the Council Chamber of the Bombay Secretariat on Monday, the 13th November 1911. Twenty-eight delegates attended under the Chairmanship of the Hon'ble Sir S H Butler, who in opening the proceedings said—

"My first duty, and most agreeable I find it, is to welcome you all to this Conference, and in so doing, on behalf of the Government of India to thank the local governments and administrations and yourselves for your presence here. The utility of Conferences of this kind is now, I think, generally appreciated, and that not only for any conclusions to which they may lead—though these must often be valuable—but also and especially for the opportunities which they present to zealous workers in different parts of India for comparing experience, exchanging ideas, and above all for setting up that enervating friction of mind with mind the want of which most men toiling in isolation feel at times as a burden well nigh intolerable. Nor can it be a disadvantage that we should get to know one another. Holding this opinion, I earnestly hope that this may be the first of a series of Conferences to be held as occasion may suggest at convenient centres. I was anxious that our first meeting should be held in Bombay in order that we might perhaps catch some of the spirit of the place the spirit which has made it the great and beautiful and progressive city that we see to day.

"The agenda before us opens up large questions of research work and hygiene the two great and complementary divisions into which modern sanitation falls. By research I mean the acquisition of further knowledge of the specific agents of infective diseases, and by hygiene, the preservation of the public health and the remedy of known defects. You will discuss problems of urban sanitation, town planning, water-supply, drainage and conservancy, rural sanitation and special sanitation, more particularly epidemic diseases and food supplies. You will also discuss vital statistics and improvement in their registration, and various scientific enquiries will be brought before you. I will not attempt to anticipate the course or the conclusions of your discussion, and I will not intervene with more than a few introductory observations.

"The basis of all sanitary achievement in India must be a knowledge of the people and the conditions under which they live their prejudices, their ways of life their social customs, their habits, surroundings and financial means. This was emphasised in the memorandum of Surgeon-General Lukis, to whose knowledge and rare ability my department is greatly indebted, which I laid up in the table at the last meeting of the Imperial Legislative Council. This proposition is really axiomatic. The ardent spirits who may think that sanitary measures possible and effective in the West must be possible and effective in India will flap their wings in vain and set back the cause which elicits their laudable enthusiasm. I am far from saying that this must always be so. I believe with all my heart in the slow but sure results of education, the forerunner of sanitation. But we have to deal with facts as they are to day. And to day the forefront of a sanitary programme must be (1) a reasoned account of the conditions and circumstances which affect mortality and the increase and decrease of populations, and (2) a study of the relative effects of various diseases of personal environment and of the social and economic conditions in the different parts of the Indian Empire. We have to work out our own sanitary salvation. We have to study the epidemiology and endemiology of our communicable diseases, the so-called 'tropical diseases'—plague, malaria, cholera and dysentery—in order that, having ascertained the actual sources and modes of conveyance, we may determine scientifically the particular methods requisite for their avoidance, prevention and suppression, and that we may apply with precision those methods which it is possible and politic to adopt and we cannot do this without the assistance and co-operation of Indians themselves.

"In this harnessing of the science of the West to the varying conditions and circumstances of India, we must keep our standard high. For many years it has been the constant endeavour of the Government of India to build up a body of scientific workers whose whole duty is investigation. Laboratories have been provided, specialists have been appointed, and we now possess in the bacteriological department a band of workers who are second to none in Europe. The names of Sir Ronald Ross and Sir David Semple, not to mention others, are honoured throughout the world. We have, as you know, a highly skilled body of investigators engaged solely on research work in connection with plague and an even larger body engaged on research work in connection with malaria, in regard to which a Conference will now be held over which Surgeon-General Lukis will preside. There still remain, however, numerous sanitary research problems in India as yet almost untouched. Some of these problems will, I understand, be brought before us by the Provincial Sanitary Commissioners and Deputy Sanitary Commissioners.

"In particular I may mention tuberculosis. Tuberculosis accounts for more than 75,000 deaths per annum in the United Kingdom, and the interesting report recently published by Dr Turner, Health Officer of Bombay shows that the mortality from this disease in large Indian cities like Calcutta and Bombay is already considerably higher than in Glasgow, Birmingham or Manchester. One of the two chief sources of danger in this disease is milk supply and butter contaminated with tubercle bacilli. The question of milk supply is therefore of urgent importance and I am glad to note that it is one of the subjects for discussion at the present Conference. Then, again, we have to be forearmed against two diseases from which India has fortunately escaped up to the present, namely, sleeping sickness and yellow fever.

"Two officers of the Indian Medical Service, Captains Greig and Mackie, have at different times been deputed to Africa to work with the Commissions of the Royal Society sent from England to investigate sleeping sickness, and a monograph on the subject by Captain Mackie is now under preparation. With a view to prevent the importation of the disease into India regulations for

the medical inspection of all immigrants from the endemic area have been enforced for several years at the different seaports, and so far as we know, no cases of the disease have escaped detection. These regulations, however, differ considerably in the different local administrations, and one set of the rules is now being drawn up for discussion with local governments. The danger of the introduction of yellow fever has recently engaged the serious attention of the Government of India, and Major James, a specially qualified officer, has been deputed to visit the endemic area travelling by the route that will be followed by ships proceeding to India when the Panama Canal is opened. He will examine ports at which the ships may touch, ascertain the systems of inspection adopted in them, study the methods by which yellow fever is kept out of Panama and Havannah, and the way in which the disease can be stamped out when it appears. He will attend any international Conference that may be assembled hereafter to consider the subject, and he will draw up a comprehensive report which will enable the Government of India to prepare a definite plan of campaign.

A determined effort is, therefore, being made to combat disease in its origin. Great results may in time be expected from the recently constituted Indian Research Fund which, as you are aware, is to be devoted entirely to the prosecution of investigations in connection with sanitation. The first meeting of the governing body of the fund is fixed for the 15th November, when it is proposed to elect the scientific advisory board, to constitute the different working committees, and to draw up a preliminary programme of work. The nucleus of the fund is a sum of 5 lakhs of rupees contributed by the Government of India, and it is hoped that this sum will be supplemented later on by the liberality of wealthy and public spirited gentlemen and ladies in India so that eventually a very extensive campaign of sanitary research may be carried on. I can imagine no more deserving object of charity than the endowment of research designed to relieve the sufferings of humanity.

In general or prophylactic sanitation which by improving the environment endeavours to protect the public from the attacks of all communicable diseases, the Sanitary Commissioners and Deputy Sanitary Commissioners will be able to tell us of steady progress and substantial achievement. The Government of India were able to assist provincial revenues last year by a special grant of more than a crore of rupees of which 50 lakhs went in subvention of the Bombay Improvement Trust. I hope it will soon be possible to introduce schemes for the reorganization of the sanitary services which will go far to meet modern sanitary requirements. I would like to bring specially to your notice the good results obtained in Fraser Town, Bangalore, which still continues plague proof. And I would ask—Is it an impracticable dream to construct a model town or quarter of a town in each province with good water supply, efficient drainage, rat proof and mosquito proof houses and an adequate sanitary staff as a measure of demonstration and education?

A resolution was then passed expressing regret at the death of Lieutenant-Colonel J. T. W. Leslie, I.M.S., late Sanitary Commissioner, after which the Conference proceeded with the business noted on the agenda paper. The first subject discussed was with reference to schemes of urban sanitation, their nature and urgency were stated, and estimates furnished of the probable cost.

TOWN PLANNING

Mr Turner read a note on town planning in Salsette, and explained the principles by which he had been guided and the results of his experience. The main point was the adoption of the principle of redistribution, embodied in the German *Lex Adikes*, obviating

as far as possible the necessity of raising capital. The entire land within the area being planned is pooled, and the local authority takes all land required for public purposes, roads, markets, open spaces, etc. The remaining land is then divided into suitable plots and allotted to the original owners. Disturbance is avoided so far as possible by keeping the main portions of the allotted plots in the same position as the original plots. The owner receives back a diminished portion, but is compensated by its increased value. If the loss by transfer exceeded any gain, compensation is paid in cash. The expenses incidental to redistribution, and the cost of making roads, etc., are financed by a loan raised on the security of a development tax assessed on owners in proportion to the individual benefits derived from the scheme. The benefit is found by estimating the unearned increment accruing to each holding on completion of the scheme. In a large area a portion of the tax need not be required from owners until works materially benefiting their land are taken in hand. A man wishing to retain his agricultural holding intact could be left out of the scheme unless the local authority considered that he should come in. Power would be taken to compulsorily acquire any land required for the scheme, but with redistribution it would be very rarely used. Mr Turner thought that with redistribution scheme it would be necessary to take power to make owners come in. It would not be sufficient to bring in a scheme only if the majority agreed. If they do not agree, the matter should be referred to the controlling authority, and if the authority thinks it necessary, they must come in. Questions of compensation should be kept out of the ordinary courts with some appeal to the civil courts in cases over a fixed limit of value. Market value would be paid for acquisition, and no compensation for compulsory requisition. The local authority would decide what land should form the subject of a scheme. Mr Turner handed in three plans showing a section of the Santa Cruz plan, one with all the original holdings, another the original holdings with "the proposed rates upon them," and a third the scheme as it will be when completed.

In the discussion that followed it appeared that no town planning schemes properly speaking had been undertaken in any of the Provinces.

Major Clamesha (Bengal) read a paper on the uses and limitations of small septic tanks and advocated their introduction. This was followed by a paper by Mr Hinton on water supply and drainage in Madras.

The day's proceedings terminated by a discussion on Captain Justice's (Madras) paper on rural sanitation, advocating the establishment of model villages. Delegates from the various provinces explained and discussed the sanitary measures already adopted in villages, and the possibility of further progress was considered more particularly in regard to the securing of a pure water-supply.

The Conference adjourned till next morning when 26 delegates and the Hon'ble Mr Butler again attended.

PURE FOOD

The question of measures of securing the purity of food supplies was first discussed and a note on the milk supply in large towns in India was read by Colonel Wilkinson. He suggested the exclusion of cattle from town areas to be enforced by the imposition of a tax, with provision of sanitary sheds at low rents outside. Further efforts should be concentrated on securing less adulteration in milk supplies, but legislation in other directions should be slow and cautious. In the discussion that followed objections were raised that the exclusion of cattle from municipal areas would lead to less control and it was thought that reform should take the direction of license for seller, cowshed and dairy within the municipal area. Mr Orr entered a caution against too stringent bye laws which it was impossible

to enforce. In Bombay the Trust were acquiring a large and at present insanitary area in the centre of the town, on which, when reclaimed, it was hoped to concentrate cattle. Mr Turner (Bombay) stated that private enterprise in Bombay was doing much in this direction, and an association of leading gentlemen had been formed who provided for keeping cows on a large scale in sanitary condition, and obtained their supplies solely from this source. Mr Tata proposes to conduct experiments with Australian bush suitable for milk buffaloes outside the city, where he hoped to establish sheds and dairies.

The question of amending the existing municipal legislation regarding food and drugs was next considered. There was a consensus of opinion as to the urgency of preventing adulteration of food and of enquiring into the adulteration of drugs. It was generally thought that standards for food, milk and ghee should first be fixed. If legislation was necessary, it should preferably take the form of a general Foods and Drugs Act, allowing for sufficient local elasticity. A staff of analysts would be necessary.

INFANT MORTALITY

Major Robertson read a paper on infantile mortality which was followed by a general discussion. Colonel Wilkinon referred to the havoc played by malaria and small pox in the mortality of children. As a means of combating it, lady doctors had been appointed in Lahore. Dr Bose referred to the apathy of the public and mentioned, among contributory causes, injudicious feeding and deficient dressing. Colonel Dyson mentioned the high mortality in the first 30 days after birth. Attention should, he thought, be directed to helping mothers and teaching them proper methods of rearing their young. He considered that trained midwives would be of great benefit. Dr Rutherford (Ceylon) stated that training of midwives had been started in Ceylon, certificates being given at the end of one year, but much depended on the willingness of people to pay for such women. Major Clemesha said that two visiting nurses had been experimentally appointed in Calcutta to assist confinements, while in Burma Major Lalor mentioned that a society for the prevention of infantile mortality had been established. Pamphlets were distributed by it, baby shows instituted and rewards distributed.

RECENT PLAGUE RESEARCH

Major Glen Liston then gave the Conference an account of recent researches in connection with plague. He said—In introducing the discussion on this paper I must presume that you have all read it, for I have no time to read the whole paper now. I have tried to bring out certain points in the paper on which I think discussion could be developed profitably, and I now propose to refer to these points. Taking up first our observations on the habits and breeding of rats, I desire to draw your attention to the very rapid rate at which rats multiply. Our laboratory experiments show that a single pair of rats can multiply to fifty pairs in the course of a year, and although our field experience does not fully confirm this laboratory estimate, we are none the less convinced that because of the very rapid rate at which rats multiply, rat destruction, to be successful, must be very thorough and very persistent. It is for you to consider whether, under these circumstances, a direct attack on the rat population of a place is practicable and likely to be successful. I am inclined to think that greater success will in the end attend measures which aim at the diminution of their food-supply and at the removal of their breeding places. This line of attack on the rat population of a place I think, has in this country generally been neglected, but some work which has been carried out in Burma by Captain Brayne must be mentioned as an exception. I understand that he endeavours to have houses kept in a proper state of repair and directs special attention to markets where rats are most plentiful and where they

generally find ready access to food supplies. Grain godowns and markets, in my opinion, should be made rat-proof and should be kept clean by a special inspecting and scavenging staff. Markets as far as possible should be isolated from human dwellings. Passing on to our experiments with the breeding of rat fleas, I think it is of interest and importance to note that, because of the favourable conditions for flea multiplication, a damp cold weather in this country is more likely to be associated with severe plague epidemics than a dry cold weather. It would be interesting to hear the experience of the members of this Conference in this connection.

I pass on now to refer to our immunity experiments which show that in the course of a series of epidemics of plague a race of rats is evolved which is naturally immune to the disease. These experiments have demonstrated that while at the present time in such plague-stricken cities as Bombay, Poona, Calcutta and Lucknow a large proportion of the rats are immune to small doses of plague, say, one one hundredth thousand part of a grain of an infected rat's spleen, rats from such plague-free places as Madras, Madurai and Rangoon readily succumb to such doses. Moreover, the young born of the relatively immune rats caught in plague-stricken cities are almost as immune as their parents, although it was possible to be sure that these young rats had never been exposed to infection. Young rats born in captivity of parents which were probably highly immune to plague in that they had survived exposure to severe artificially produced epizootics, were even more resistant to plague than ordinary wild Bombay rats which, we have remarked, are at the present time comparatively immune to small doses of plague. It is thus evident that this immunity is transmitted from parent to offspring. This is a comforting discovery, for it assures us that if we wait long enough plague will ultimately disappear from India as it has done in the past. Let us hope, however, that this assurance will not lull us to sleep or cause us to curtail in any way our efforts to save the vast numbers of human lives which must otherwise be sacrificed. While we wait for the plague to disappear, it may be very many years hence. I need only briefly refer to our observation on chronic or resolving plague which have shown that when a sufficient number of rats are used, chronic or resolving lesions may be developed after experimental infection with plague virus. A more extended experience of these plague lesions has convinced us that they play little part in the annual recrudescence of the disease.

I pass on now to our epidemiological inquiries which have shown that plague has been absent from the Province of Eastern Bengal and Assam mainly because of the habits of the people inhabiting this province and the structure of their houses. The experience has shown us that plague is not likely to spread where the habits of the people and the structure and arrangement of their houses is such as not to favour rats. Our observations in Poona City which now have extended continuously over three years have shown that at the close of an epidemic the rat population of a place is greatly reduced, and that thereafter if the conditions are favourable, the rats rapidly multiply. They have shown also that the number of fleas found on rats has a very definite seasonal variation, a variation which is constant from year to year and corresponds with the climatic variations and with the seasonal variations in the intensity of plague epidemics. But the most important fact which has emerged from this inquiry is the part played by the people in introducing infection from infected to healthy areas. For a short period, September 6th to September 20th, arrangements were made to determine the number of persons arriving at Poona station from infected towns and villages. During this time 1,232 persons arrived from known infected places. As soon as it became known that Poona City was infected, the number of persons coming to the City from infected places practically ceased and an exodus from the town

itself took place. Moreover, the presence of infection in certain places only came to our knowledge when cases of plague were brought to Poona from them, although arrangements had been made with the authorities for securing as early information as possible on this matter. Our information was often many weeks in advance of that supplied to us by the authorities. The importance of obtaining early information of the outbreak of plague has hardly been sufficiently realised by Government.

I need hardly add that this information of itself will not be of much value unless plans are well drawn up so that action may be taken at once on receipt of the information. In this connection I would particularly like to draw the attention of the Conference to the Madras Plague Manual where the course of action of every administrative officer in a district is clearly laid down so soon as information of the outbreak of plague reaches him. What is required in the prevention of epidemic disease is first, early information, to be followed by, second, immediate and clearly defined action. So far as I am aware, much requires to be done in this direction in India. Our work in the United Provinces has been mainly devised to explain, if possible, apparent anomalies in the distribution of plague. If the rat flea theory of the propagation of this disease is correct, as I believe it is, it should be possible to explain the anomalies of distribution. If with the aid of this theory we are unable to do so, there is something wanting in our knowledge. By making such investigations we are seeking to perfect our knowledge of this disease. The Madras Presidency has been peculiarly fortunate in having escaped the plague, and our inquiries here have been devised to find out whether this comparative freedom from the disease in the Madras Presidency has been due to good luck or good guidance or whether a little of each is responsible. Incidentally we hope to save the Madras Government a considerable sum of money if we are able to show that, after all, there are some compensations—a freedom from plague—associated with a somewhat hot and uncomfortable climate. We have carried out a very exhaustive inquiry into the usefulness or otherwise of anti-plague curative serum. Our results show that up to the present no serum has been made which has any marked effect in curing the plague, but we still hope that better results will be obtained in the future.

In conclusion, I wish to draw your attention to the fact that I think the successful work of the Plague Commission has largely been due to the combination of laboratory work with epidemiological and clinical inquiries. I do not think that Sanitary Science or curative medicine or for that matter medical research will advance one iota unless there is combination in the work of these several departments of our profession. I think that up to the present in India there has been too great a tendency for the sanitary, the epidemiological and the clinical departments of our profession to hold aloof from one another. Progress can only be made where we seek to help each other.

In the discussion that followed Surgeon General Bannerman agreed cordially with Major Glen Liston that the work of laboratories must be carried on in close connection with the work of the Sanitary Services and with hospital work. He mentioned the difficulty at Patel owing to the distance from hospitals of the laboratory. Captain Justice thought that the passport system of Madras should be maintained pending the enquiries of the Commission in Madras. Colonel Dyson mentioned although in Poona rats became immune, in Sindh, where epidemics occurred year after year such was not the case. Dr. Kishor Chunder Bose said it was useless to attempt many plague measures without the co-operation of the people whose inertia and indifference rendered the measures adopted useless. Major Stokes, C.P., drew attention to the inadequacy of the law in compelling reports of the outbreak of a case of plague. Major Browning Smith said that his experience

in the Punjab as to the effect of humidity on plague entirely bore out Major Liston's conclusions. A weak monsoon was followed by a mild epidemic and vice versa. He asked what was the longest period for development from the egg to the flea. He said that plague was present in London for 100 years before the epidemic of 1665, including four severe epidemics, and for 25 years after. He feared there was no prospect of a cessation of plague of itself for a very lengthy period. Early information was essential, but was largely a matter of staff. Round Delhi now, owing to the staff being sufficient, it had reached such a pitch of perfection that when a field rat fell down a well, its mortality was reported to the plague officer.

Major Lalor put forward Captain Bayne's views, viz., that one could not make a house rat proof except at a prohibitive cost, and that it is when the rat population reaches a certain limit, that plague among humanity commences, and that it is possible to keep the rats below this limit.

The unanimous view of the Conference was in favour of the view put forward by Major Glen Liston, supported by Surgeon General Bannerman and Sir David Semple, that it was essential that there should be close co-operation in the future between the laboratory worker, the sanitarian and the clinician. Major Glen Liston said that he would experiment on the breeds of rats mentioned by Colonel Dyson.

MALARIA COMMITTEE

The second meeting of the All-India Malaria Committee commenced on Thursday, the 16th November, 1911, at the Secretariat, Bombay. Over 30 members and delegates were present, amongst whom were the Hon'ble Mr. S. H. Butler and the Hon'ble Mr. L. C. Porter of the Education Department of the Government of India. The meeting was opened by the President, Surgeon-General C. P. Lukis, CSI, Director General of the Indian Medical Service, who delivered the following address—

PRESIDENTIAL ADDRESS

By SURGEON GENERAL SIR C. P. LUKIS,
MD, FRCS, ACSI,

Acting Sanitary Commissioner with the Government of India

GENTLEMEN,—My first duty is the very pleasant one of welcoming you to this our second Conference. I trust that our deliberations during the next three days may lead us one step further in the direction of the goal at which we are striving, namely the mitigation of Malarial Fever in this country. But before proceeding to the formal business of the day, I must first place on record my sincere regret that, owing to his untimely death, we are deprived of the valuable assistance of my friend and colleague, the late Lieutenant Colonel Leslie. His loss will be deeply felt not only by us but by all those who are interested in the cause of sanitation in India and the Far East, and I am sure that I am expressing the views of this meeting when I say that we sympathise most sincerely with his family, whose loss is so much greater than ours.

The purpose of the present meeting is to ascertain what progress has been made since we met for the first time in Simla in November last, and to make suggestions which will facilitate further advance.

With this object the agenda paper has been prepared under three chief headings, to which the discussions on each day will be strictly confined.

But, before inviting the delegates to state what has been and is being done in the different provinces, I must ask your indulgence for a short time whilst I draw attention to certain points of general interest.

In the first place, I wish to ask for your assistance in regard to our publication "Paludism," two numbers of which have been brought out during the last year. I think it will be admitted that "Paludism" is a very useful paper, but, gentlemen its usefulness will not be maintained unless, in the future, we receive from officers engaged in malarial operations, far more contributions than have been received in the past. The preparation of the third number, which was issued in August last, was particularly difficult on this account, I trust therefore that my present appeal will not be in vain.

Another matter of general interest is the recent change in the method of selecting officers to attend the malaria classes at Amritsar. Under the new arrangements it will be possible for any officer who is seriously desirous of studying malaria to gain admission to one of the classes, and it is hoped that ere long this will result in a large number of competent and keenly active workers being spread over the country—a result that cannot fail to bring about a great increase in our knowledge not only of malaria but of other closely allied diseases especially those of the "Leishmania" group.

Finally, brief reference must be made to the new Indian Research Fund with the aid of which we hope to carry out many investigations which hitherto for financial reasons have been outside the bounds of practical politics. The first enquiry which will be undertaken at the expense of this fund has already been commenced, namely an enquiry into the methods by which Yellow Fever may be prevented from entering our Indian ports, and may be stamped out should it ever succeed in obtaining a footing.

The danger of its introduction which may arise on the opening of the Panama Canal has recently engaged the serious attention of the Government of India, and it has been decided, in consultation with the Right Hon'ble the Secretary of State for India, to depute Major James to the endemic area by way of the route that will be followed by ships proceeding to India when the canal is opened. During his absence his duties as Secretary to this Committee and Editor of "Paludism" will be performed by Captain McKendrick, whose special knowledge of anti malarial measures renders him specially fitted for the post.

There are two other enquiries in which we expect to obtain the assistance of the Research Fund.

The first is the institution of malarimetric investigations, for which work the central committee consider it desirable to have at least one worker who can devote his whole time to the development of malarimetric methods and their application to the study of Indian malaria. Such a worker we hope to obtain with the assistance of Sir Ronald Ross.

The second is an enquiry into the bionomics of anopheles, in connection with which we trust that we shall be able to secure the help of Professor Huxlett.

So much for investigations to be made in the future. I now turn to two very important contributions to our knowledge which have been made during the past year. The first is the publication of Dr. Bentley's admirable report on the causes of the recent malarial outbreak in Bombay, which has confirmed Major Liston's original observations incriminating *Neocelia stephensi* as the carrier of malaria in this city and which suggests that malaria cannot only be reduced but it can be absolutely eradicated from the greater part of Bombay at a cost which would amount to less than a tenth part of the loss estimated to be occasioned each year by the disease. The second contribution is a report which has just reached me from Major Christophers who was sent to investigate the causes of malaria in the Andamans. The first thing that struck him was the remarkable fact that a large number of villages were quite free from malaria in spite of the fact that many of them were surrounded by rice land, swamp or jungle, whereas others showed a considerable amount of malaria, the

spleen rate varying from 25 per cent to 50 per cent. Eventually it was noted that what determined the healthiness or unhealthiness of a village was its proximity to the sea. Villages near the sea were invariably malarious, those remote from the sea healthy. Even a distance of half a mile from the sea was sufficient to ensure the endemic index being 0 per cent. This distribution of malaria was shown by actual measurement to be exactly coincident with the occurrence of a particular species of anopheles, namely, *Pseudomyzomyia Ludlowi*, which appears to breed chiefly in salt swamps and blackish water, and which is undoubtedly the chief malaria carrier in the Port Blair Settlement.

Now so closely does this mosquito, on casual examination resemble *N. Rossi* that, with reference to these two species, Prof. Kysel has remarked upon the folly of twice distinct us in regard to the species of anopheles and the transmission of malaria. Yet the existence of two districts though closely related, species of anopheles is the explanation why, in the Andamans, the proximity to rice lands and swamps is innocuous, provided that these are at a distance from the sea.

These observations of Bentley and Christophers show, I think, the value of investigation, and how important is the study of species when one is concerned with the spread of malaria by anopheles but gentlemen they do more than this, they justify the hope that the adoption of anti mosquito measures in India must not prove either such an expensive or impossible task as some would have us believe.

Here I should like to say that I view with concern the tendency amongst malaria workers to divide up into two camps, namely, those who advocate anti mosquito measures and those who pin their faith on quinine prophylaxis. In this connection I would draw your attention to a speech which I made before the Imperial Malarial Conference in 1909 when, after pointing out the almost insuperable difficulties connected with quinine prophylaxis as applied to a free population, I went on to say that, whilst agreeing that quinine prophylaxis, properly carried out, was one of the most valuable weapons in the fight against malaria, and whilst admitting that in rural areas it might be the only weapon at the disposal of Government, I felt bound to express my opinion that, if they were to place sole reliance on this measure in Indian villages, they were doomed to disappointment. Quinine prophylaxis should go hand-in-hand with general sanitation and with the destruction of anopheles breeding grounds wherever this can be accomplished at reasonable expense, and it seems to me that recent observations justify us in thinking that this destruction is not likely to be as costly as has hitherto been supposed. Quinine has undoubtedly conferred inestimable benefits upon the individual, but it never has and never will be of equal value to the community as a whole, and you cannot get away from the fact that if there were no mosquitoes there could be no malaria. I fully realise that in some of the hyper-endemic areas mosquito destruction may be a counsel of perfection, but even there much good may be done by reducing the numbers of the special species which acts as the carrier, and, I ask you, should we halt in our activity because we cannot attain to an ideal perfection? I recognise the fact that no one method will suffice as a general anti malarial measure. I recognise the power of each in its proper place, but I hold strongly that wherever possible anti mosquito measures must be carried out. I also recognise the importance of preliminary investigation, but it must not be carried to extremes, the time has come for definite action on well considered and practical lines.

It must be remembered that there is a limit to the number of men available for carrying out such thorough investigations—also that such investigations occupy much time, so that before they are completed, the acute situation may have declined and the psychological moment for action may have passed away—not to

occur again until the next epidemic. I wish it to be clearly understood, therefore, that I do not think we can depend upon scientific research alone. For this opinion there are two very good reasons. In the first place, I hold that, in many cases, actual operations may with advantage be carried out in conjunction with investigation. Indeed I consider that, in certain instances, the former may be the only method of investigation. We are dealing with a vast complex of factors and the elimination of one or more of these may be the only practical way of solving the problem.

Again from the point of view of the limited resources at our disposal, as compared with the large amount of malaria with which we have to deal, I submit that if we wait until our experts have made a complete investigation of all the problems connected with the epidemiology and endemology of the disease there is the danger that India will remain for many years practically untouched. We require then two classes of men—the scientific experts and the practical workers—the former engaged in research and ready to rid the latter when in difficulties—and the latter trained in the taking of spleen indices and in the recognition of the commoner varieties of anophelæ. It is not necessary that they should be able to dissect them. Men trained to this extent would be quite capable of mapping out the geography of an epidemic and that of the mosquito breeding places in the neighbourhood of the infected area, and of noting the types of mosquito found therein, and from the data furnished by them it ought not to be difficult to ascertain the actual carrier and to work out a definite scheme of attack.

I trust gentlemen, that no delegate will think that I wish to imply that nothing has been done in the past. This is very far from my intention. I merely wish to express my opinion that we are perhaps too much inclined to pin our faith entirely on the scientific investigation to the detriment of the practical worker, and my reason for bringing this forcibly to your notice is that we are, at the present moment, fortunately situated as regards malaria. We have narrowly escaped a year of famine, and, owing to the deficient rainfall, we are justified in hoping that, unless circumstances of an unexpected nature arise, we shall not be visited by a severe epidemic of malaria during the coming year. We have, therefore, ample time in which to prepare our plan of campaign.

Only a few words and I have done. I alluded just now to the diseases allied to malaria, especially those of the "Leishmania" type. There are several points in connection with these which require further investigation.

As you are all aware, the genus *Leishmania* at present comprises three species—

- L. Donovanii—the parasite of Kala Azar
- L. tropica—the parasite of oriental sore
- L. infantum—the parasite of infantile splenomegaly in N. Africa

The points in connection with these, which in my opinion require further investigation, are as follows—

(1) *The possible antagonism between oriental sore and Kala-Azar*

So far as I am aware, the evidence in favour of this view is chiefly geographical in nature and it appears to me that we should endeavour to obtain more accurate and scientific evidence on this point, which is one of more than academic interest, for, if the antagonism is proven, there ought to be no difficulty, on the analogy of vaccinia and variola, in utilising our knowledge and in immunising patients against attacks of Kala Azar by inoculating them with the milder disease.

(2) *The role of the domestic fly as a carrier of oriental sore*

Both Wenyon, as the result of his work in Baghdad, and Row, in India, regard this insect as the carrier. On the other hand, Patton, as the result of his recent

observations in Cambry, is inclined to incriminate the bed bug. Further investigations on this point are clearly necessary.

(3) *The question of the carrier of Kala Azar*

It is generally supposed, though it is by no means proven that the bed bug is the carrier in this case. On the other hand, Nicolle regards the dog as the reservoir of the parasite which causes the infantile Kala Azar of North Africa, and both he and Basili have provided that the parasite is carried from dog to dog by the dog-flea, and he suggests the possibility that it may be conveyed from dog to man by the same means.

So far as I know, dogs in India have not been found to be infected with *L. Donovanii* and I believe that all attempts to infect dogs with it have failed, but I submit that a much more extensive examination of dogs in Kala Azar districts in India would seem to be indicated.

Finally, gentlemen, let us not forget the possibility of the importation of Yellow Fever into India. Major James has gone to Panama to study the methods of keeping it out of the country, but that is no reason why we should sit with folded hands waiting for its arrival.

In this connection I invite your attention to the following quotation from the admirable report on the recent outbreak of that disease in West Africa, which was almost the last piece of work done by the late Sir Robert Boyce, whose untimely death we all deplore.

He says "Much more attention will require to be paid to the *Stegomyia* and to the fevers met with in towns where the *Stegomyia* is the most common mosquito. Medical officers will require to be as alert to the possibility of Yellow Fever as they are in the West Indies or in Central America. Nay more it is essential to ascertain definitely what is the prevailing mosquito of all principal centres of population, and the enquiry might at this stage with advantage be extended to other parts of the tropical empire such as India and the East Indies."

This is sound advice. Think what a difference it might have made if in 1894 we had known as much about the rat flea and plague as we now know about the *Stegomyia* and Yellow Fever. It behoves us therefore to be up and doing. The Central Malaria Committee has not neglected its duty in this respect—we have already more than 42 species of Culicine mosquitoes, including 6 species of *Stegomyia* in the Museum attached to the Malaria Bureau, and in order to advance the work still further, we are bringing up to date the pamphlet of instructions to Collectors, emphasising in it the present necessity for collecting *Stegomyias* and other Culicine mosquitoes, and we are making arrangements to distribute it even more widely than is done at present.

I trust that all of you will do your best to help us in this matter. But do not be content merely with a mosquito survey, lose no opportunity of preaching a crusade against the mosquito, both in its sylvan and domestic varieties. The work of Sir Ronald Ross has demonstrated the danger of anopheline as carriers of malaria. We now know that domestic mosquitoes of the genus *Stegomyia* may prove an even greater danger in the immediate future. Even though the complete eradication of mosquitoes, therefore, may be a counsel of perfection so far as India is concerned, it is our bounden duty, whenever practicable, to endeavour to lessen their numbers and to educate the public in such a way that the efforts of Government may be supplemented by individual endeavour. Unless this be done, it is useless to expect that our campaign against malaria will ever be crowned by success.

MALARIA INVESTIGATION

Accounts of the arrangements that have been or will be made for the investigation of malaria in the different Provinces were then placed before the meeting. The following delegates spoke—Captain Justice, Madras,

Lieut Col Dyson, Bombay, Major Clemesha, Bengal, Captain Graham, United Provinces, Major Stokes, Central Provinces, Lieut-Col Wilkinson and Lieut Col Adie, Punjab, Lieut Col Hare and Dr Bentley, Eastern Bengal and Assam, Dr Rutherford, Ceylon, Major Lalor Burma. Major Christophers referred to the work of the Central Malaria Bureau. He stated that of the known species of mosquitoes only two described varieties of anopheles are lacking that it would seem that varieties which have been considered as priceless are found to be comparatively common. General Lukis reported on the work of the governing body of the Central Research Fund. In addition to the matters touched upon in his opening address, he mentioned that various committees and investigations were being organised. Among these a committee of enquiry into Kala-Azari had been formed consisting of Surgeon General Bannerman, Major Christophers and Dr Bentley, and it was hoped that investigation into the disease would shortly be commenced in both Madras and Eastern Bengal and Assam. An entomological committee consisting of Major Christophers, Captains Patton, Clegg and Mackie, and Mr Howlett had been appointed to study the various mosquitoes which are of medical interest, especially with regard to their action as carriers of disease and to put up proposals for the publication of an entomological bulletin. Major Liston had been asked to formulate a scheme of active propagandism with the object of reaching the people themselves. A grant had been given to the Malaria Bureau to establish a reference library of literature connected with malaria.

Major Fry gave an interesting account of malarial conditions in Bengal, and Captain Graham described investigations into the malarial history of the United Provinces. Dr Brahmachari recounted certain experiments on mosquito prevalence which he had carried out by counting the number of larvae in tanks by a method of judicious sampling. From these experiments it appears that in Calcutta the month of maximum prevalence is November. Captain McKendrick read a paper on the mathematical aspects of malaria. The effects of the various methods of prevention were discussed, and it was shown that anti mosquito and quinine prophylactic measures gave satisfactory results, even when they were only partially carried out whereas Koch's method of reducing the sources of infection by gummisation during the off season was only of value when rigorously enforced. He suggested various investigations which would yield results which would be of value from the mathematical standpoint. In his opinion the maximum seasonal prevalence of mosquitoes was probably in July and August, and not in September and October as is generally supposed. He asked for information as to the effect of malaria on the mosquito itself. Major Christophers described experiments in which he had fed culices on birds infected with proteosoma, in which the mosquitoes died. Dr Bentley gave figures of his findings in Bombay. In his opinion mosquitoes may recover from an infection as is shown by the fact that in certain mosquitoes he found parasites in the salivary glands while there were none in the stomach. Mr Howlett described an interesting experiment on mosquito prevalence. He collected culicid eggs from a pool which stood in an isolated position in a square mile of dry country. He counted the eggs which were laid at intervals of 3 days. At the end of 5 weeks he had collected three million eggs.

Dr Bentley referring to his work in Bombay said—The importance of species of anopheles in relation to malaria has long been recognised from the epidemiological standpoint, but the result of the investigation in Bombay has been to show that it is a matter of great importance also from the point of view of prevention of the disease. In 1908 Major Liston discovered that *N. Stephensi* was the carrier of malaria in a portion of Bombay severely affected by the disease. Later on Captain McKendrick found that in N Fort and Esplanade where a high spleen index existed among the

children very many breeding places of *N. Stephensi* existed. Subsequently when I took up the investigation I was able to confirm both the discovery of Major Liston which implicated *N. Stephensi* as the mosquito responsible for the spread of malaria, and the observations of Captain McKendrick which showed the relationship of a high spleen index to prevalence of breeding places of *N. Stephensi* in N Fort and Esplanade. In addition I was able to show also that not only was malaria present in considerable amount in other parts of the city, particularly Dhobi Talao, but that wherever it existed in an amount which could not be explained by importation, careful search revealed the presence of breeding places of *N. Stephensi* and the conclusion finally arrived at was that the problem of malaria prevention was mainly if not entirely the problem of dealing with this one species. The question of type of breeding places selected by *N. Stephensi* thus became of great importance. Observation showed that generally breeding places of an artificial nature were favoured by this mosquito—and this simplifies the question of prevention enormously—because artificial breeding places are almost invariably more easily dealt with than natural ones. It will be seen therefore that the species of anopheles responsible for the spread of malaria among a community has a very great importance from this point of view of preventive measures.

Major Christophers described the results of his recent visit to the Andamans. He stated that malaria is not very intense in these islands. It is restricted to a belt bordering upon the sea. Villages in the interior are non malarious in spite of the existence of such breeding places as rice land swamp and running water. The distribution of the disease coincides exactly with the occurrence of *P. Ludlowi*, a species of mosquito which breeds freely in brackish water. Dissection of adults showed the presence of the tertian parasite. The commonest form of malaria in the villages in the Tertian form whereas amongst the convicts who live in the fever zone the quartan variety predominates. The relative preponderance of quartan in the latter case may be due to a small amount of fresh infection, and a large prevalence of residual infection and of attacks due to relapses. Dr Brahmachari read a paper on Burdwan fever. In his opinion it is a combination of Malaria and of Kala-Azari. The Conference adjourned until next morning.

The Malaria Conference met again, at the Secretariat, Bombay on Thursday, Surgeon General Lukis, C.S.I., was in the chair.

ANTI MALARIA MEASURES

Having completed the discussion of organisation against malaria in the various provinces, and scientific papers on general malaria research having been contributed on Thursday, the Conference to day directed its attention to the discussion of measures directed against malaria.

Dr Bentley opened a discussion in anti mosquito measures of malaria prevention by a brief description of the conditions in Bombay. He showed how wells and cisterns were the chief objects of attack. If wells were filled up and cisterns closed he thought that malaria would be exterminated from Bombay in a short time. He dealt with the financial aspect, and said that the expenditure of one lakh of rupees would have rendered innocuous 60 per cent of the permanent breeding places.

Major Liston, in referring to Dr Bentley's work in Bombay and Major Christophers' investigation of malaria in the Andamans, expressed his great satisfaction that anti mosquito measures were taking such a prominent place in the minds of Malarialogists in India.

Colonel Lyons considered that gummisation was a measure for the individual, and that investigation of breeding places, and the gradual extension of anti mosquito measures was the course which ought to be adopted in India. He realised the great difficulty of enforcing quinine prophylaxis amongst troops. He

realised that the success of even controlled distribution was only a partial one. He spoke of the benefit of anti-mosquito measures as a partial measure. If people faced the question of mosquito destruction honestly he was sure that there would be a satisfactory diminution in malaria. He pointed out the danger of pits near habitations and considered that as most of these were formed as a result of taking earth for road making and building, legislation in this direction was most necessary, and would be followed by an immediate improvement.

Sir David Senle said that he was pleased to see the prominent place which had been given to anti-mosquito measures. He did not advocate it as a universal measure, but he was convinced that in many places in India conditions were favourable for mosquito destruction.

Major Robertson referred to the President's address. He most cordially agreed and welcomed the statement of the President that the psychological movement for action should be seized. He said that in the past this had not been realised—and that in some cases years had been allowed to lapse before action was taken. He thought that we had now reached a point at which practical measures might be put into action. He considered that to rely on quinine alone asks too much of the native. In many instances the native was actually prejudiced against the drug. He thought that quinine is a general measure was doomed to failure. He was convinced that anti-mosquito measures could be enforced in many places and should be put into action wherever possible.

Dr Bose referred to conditions in Calcutta, and advised the use of "*adhatoda venet*" (*Lalux*) as a germicide.

Major Christophers said that two questions had arisen—the prevention of malaria in Bombay, the other the prevention of malaria in India in general. As regards the first he was satisfied that the methods proposed by Dr Bentley were the only ones which could be applied. He agreed thoroughly with his conclusions. He held, however, that Borabai could not be compared with the rest of India.

Major Clemesha agreed with Major Christophers that the results of Bombay could not be applied to India in general. If the breeding place of the mosquito could be definitely marked out, then anti-larval measures should certainly be carried out, but this was seldom the case. He disapproved of indiscriminate anti-larval methods.

Dr Rutherford (Ceylon) said that he had had 14 years' experience in West Africa. There it was illegal for any one to have standing water or pools in their compounds and that all wells must be covered. An organization consisting of district inspector and local village headmen is in control and subsidies are given to villages and removed if internal sanitation is not carried out satisfactorily. Mapping out of breeding places is done by untrained men and the native now knows and can recognise mosquitoes.

Railways are not allowed to make borrow pits. There is a great improvement in the health of West Africa during the 14 years in which he had known it. He was in favour of anti-mosquito measures in towns and in the villages which do not cover such a large area as they do in India.

Mr Hutton referred to a case in which in one town tanks were being filled up to improve sanitation, whereas in another quarter of the town railways were being permitted to form borrow pits. These lay in lines along the main road paths as separate unconnected tanks. He advised legislation against borrow pit formation in the future, and of connecting pits by drainage channels. He also advised the formation of bye laws prohibiting the digging of tanks, ponds and pits below the natural drainage level.

Surgeon-General Banerjee referred to Ennotte in which the conditions are very similar to those of the Fort in this City. The breeding places are wells and the species is *Stephensi*. He considered that preliminary investigation should be invariably made, and thereafter if possible anti-mosquito measures should be attempted.

Lieutenant Colonel Wilkinson (Punjab) emphasized the importance of the treatment of patients, in reducing the sources of infection. Neither anti-malarial nor quinine measures should be indiscriminate.

Major Christophers brought forward the question of how to attack malaria on a large scale. In certain parts of the Punjab whole districts are affected by a fulminant type of epidemic. In his investigations he found that the cause of this lay in flooding. It was not a question of local rainfall, but of overflow of rivers and in some instances of the breaking of bunds. As regards forecasting malaria he had found that a year of heavy rainfall was especially dangerous if it succeeded a year of draught. He also alluded to the effect of poverty in increasing the intensity of epidemic.

Lieutenant Colonel Wilkinson referred to a proposal in the Punjab to lower the level of the sub-soil water.

Dr Bentley discussed the effects of economic stress in endemic malaria. He found that in certain villages in Eastern Bengal the mortality from malaria was not in conformity with the admission rate. He investigated the matter and found that wherever there was evidence of extreme poverty, when endemic malaria increased in intensity. He found that this referred to whole villages as well as to families.

Major Lalor read a note on a small fly which preys on malaria-bearing mosquitoes and probably kills them. He then read a translation from the official report of the Italian Commission as the results of the Italian campaign against malaria. The improvement of health in Italy is shown to be due to many natural factors and to general improvement in sanitation. The commission then discusses the question of efficacy of the scheme of quinine prophylaxis now in force. Much of the quinine issued is not consumed. And it is possible that the scheme is in effect not one of prophylaxis but of treatment of the sick. The commission states that hygienic reclamation constituted an advance towards a state of more perfect hygiene but it does not suffice, since it deals with large canals not with the smaller and more useful ones made by the spade of the peasant. The real work of reclamation lies in the intensive culture of tracts previously drained by the aid of hygienic reclamation. State quinine has failed to reduce sickness and mortality from malaria, but the disease has not disappeared except in places where intensive cultivation has overgrown the land. In these circumstances malaria is found to disappear even where the related mosquitoes have continued to infest the locality. The commission is of opinion that the prophylactic campaign should be inspired less by the ideas of keeping individuals healthy, and more by that of destroying foci of infection by the treatment of the sick.

From the conclusions of the report Major Lalor was of opinion that no single weapon would accomplish malarial extinction. That is the problem which Italy has to face. In India, however, one can only aim at prevention. He advised the use of travelling dispensaries and active propaganda. In his opinion quinine prophylactic methods, though prophylactic in intention, really proved on examination to be methods of treatment of the sick. He realised the importance of the President's reminder that where there are no mosquitoes there can be no malaria.

Colonel Lyons read a paper on travelling dispensaries in the Bombay Presidency and Captain Graham recounted what was being done in the United Provinces.

Lieut Col Hue reported on the organization employed in Eastern Bengal and Assam for quinine distribution and propaganda, and read a paper on the distribution of quinine to school children. Dr Bentley discussed the prejudice which exists in the minds of natives against quinine. The ideas prevalent are that quinine either causes malaria, or that it binds the disease in the system. He showed books and almanacs which he had collected in Bengal and read some statements from them, quoted from English medical literature, but of

an entirely misleading character. He recognised that this prejudice stood directly in the path of genuine propaganda. Many remedies were at present on the market which were reputed remedies for "Quinine Fever."

Dr. Bose (Calcutta) agreed with Dr. Bentley as to the prejudice against quinine in Bengal and recounted certain of his experiences.

Major Christophers referred to the absence of research on the subject of the benefits to be derived from quinine distribution. He stated that in the Duars quinine is becoming increasingly popular amongst Europeans. He considered that what was necessary is the popularisation of quinine in the same way as patent medicines are popularised.

CONFERENCE RESOLUTIONS

The following resolutions were proposed by Surgeon-General Bannerman, and carried —

I This Conference is of opinion that researches by experts in the field such as those carried out by Christophers and Bentley, prove the value of preliminary scientific investigation and seem to point to the probability that anti mosquito measures may not prove so costly as was at one time feared.

(Seconded by Major W G Liston, I M S)

II The Conference believes that no one measure can be suitable for all the conditions that favour the prevalence of malaria, that quinine prophylaxis applied to a free population is difficult to carry out in the thorough way necessary for success, and that a combination of several measures may be required as local circumstances may indicate. The Conference is of opinion that, notwithstanding the difficulties of quinine prophylaxis, it cannot be too strongly emphasized that under the peculiar conditions of the Indian populace arrangements for the treatment of quinine of those sick from malaria is a matter of primary importance from the point of view of saving life, of preventing suffering, and of destroying a potent source of infection.

(Seconded by Sir David Semple)

III The Conference desires to call the attention of Government to the possibility of danger arising from borrow pits in the proximity to human habitation, especially when such excavation would result in stagnation water therein.

(Seconded by Colonel R W S Lyons, I M S)

IV The Conference is of opinion that the education of the people is a most important anti malarial measure, and that every effort should be made to secure the co-operation of the public without which there is little hope that the campaign against malaria will ever be crowned with success. They believe that instruction in schools as well as lectures and lantern demonstrations in villages and towns are the best methods of propaganda, and that in this way information is more likely to reach the people than by the publication of pamphlets and posters.

(Seconded by Sir David Semple)

V The Conference while strongly recommending the prosecution of further research is of opinion that although expert investigation is still necessary, enough is known as to the breeding habits of mosquitoes, etc., to make it frequently possible for trained workers to deal with malaria in an efficient manner.

(Seconded by Lt Col T E Dyson, I M S)

VI In view of the possibility of the importation of yellow fever into India, the Conference suggests the advisability of a careful "Stegomyia" survey and of the education of the public in the matter of destruction of domestic mosquitoes.

(Seconded by Sir David Semple)

The six resolutions were carried unanimously. The Conference then closed.

ANNUAL REPORTS

MADRAS SANITARY REPORT (1910)

This report reached our table after the middle of November 1911. It consists of three reports, that of the Sanitary Board of the Sanitary Commissioner and of the Sanitary Engineer.

The report of the Secretary of the Sanitary Board is brief and gives a long list of Sanitary Schemes 'examined' during the year. We note that standard type plans have been prepared for operation rooms, for rural hospitals, for animals, and for the extensions of village and town sites.

The birth rate is given as 33 and the death rate was 35 in the Presidency. Cholera prevailed in some districts, being in seven districts in continuation of the previous years prevalence. It is reported that in some Municipal towns the rules for combating cholera have worked successfully.

Small pox prevailed, and the Sanitary Commissioner states that until compulsory registration of births is in force better results in infantile vaccination cannot be expected.

Plague was but slightly prevalent and there were no cases in nine districts and in five other districts 19 cases were imported. On the subject of malaria prevention Cpt Justice, I M S, the Acting Sanitary Commissioner, writes as follows —

"The methods adopted consisted in (1) the filling up of useless ponds and pools and of pits and hollows, (2) removal of rank vegetation, (3) destruction of mosquito lair by kerosene oil, (4) introduction of effective drainage system, (5) free distribution of quinine in malarial centres, and (6) prohibition of wet cultivation in close proximity to human habitation.

Among the municipal towns which bestirred themselves in this direction, Kodukanal and Coconada stand conspicuous.

The efforts made in rural tracts to grapple with the disease were sporadic. Godavari appears to have been earnest in the matter, as two itinerating dispensaries in charge of special sub assistant surgeons were started in Chodavaram Agency as an experimental measure but the result of the experiment is reported to be unsatisfactory, because both the sub assistant surgeons fell ill of fever owing to their continued stay in the Agency tracts and were patients in the head quarters hospital at Coconada. It is proposed to repeat the experiment by giving more facilities to sub assistant surgeons to be deputed for this special duty. In North Arcot district nothing was done during the year under report. Provision has, however, been made in the budget estimate for the current official year for opening two itinerating dispensaries. In the Chingleput district, the question of dealing drastically with malaria in Eunore and Kathi vakam is under the consideration of Government. The District Medical and Sanitary Officer, Coimbatore, continues to report that nothing can possibly be done in this direction till a Sanitary Assistant is posted to that district. No anti malarial operations were carried out in Bellary owing to heavy rains and no information regarding the measures adopted in the Tanjore district has been furnished by the District Medical and Sanitary Officer.

The cropping of land trenched with night soil received but scant attention during the year. With the exception of Bellary, Cannanore, Bezwa, Vizianagaram, Nogapitam and Vizigapatam where crops were raised on the trenching ground the night soil was buried in trenches and either sold as manure or not made use of. In some municipalities such as Adoni, Guntur, Kaur and Palacottah the competition for night soil is very keen and the contents of night soil trenches were sold to advantage, in other municipalities where the night soil was sold the income was inconsiderable. There is no reason why this should be so seeing that there are several towns similarly and even better circumstanced than these in regard to agricultural operations in their neighbourhood. This again is evidence of want of enterprise on the part of municipalities where people do not come forward to purchase night soil manure through prejudice, the municipality should cultivate the trenching ground to show the ryot the opportunity he was missing of securing very valuable manure. It should also be explained to the ryot that there is nothing objectionable in night soil after it has been buried for a time. The night soil trenches should be carefully and systematically laid out and managed on the lines indicated in the various inspection reports. I am afraid this does not receive the attention it deserves at the hands of municipalities generally. The value of street sweepings however, is better understood by the ryot.

"Practically speaking no conservancy arrangements exist in rural areas. In the few places where attempts at conservancy are made the staffs are not only extremely inadequate but supervision is very defective. The number of villages conserved during 1910 was 595 against 598 and 596 in 1909 and 1908 respectively. Of these 392 were unions and 203 non union villages. There was thus a fall in the number of villages

employing conservancy staffs, but it is satisfactory to note that the number of unions with conservancy staffs rose from 359 in 1909 to 392 in 1910. Taking the total number of local fund villages 42,852, those figures are infinitesimal and are indicative of the scant attention paid to village sanitation.

Conditions as to drainage and water supply were more or less the same as in the previous year. The chief sources of drinking water were wells, tanks, rivers, and irrigation channels. These are very badly looked after and are subject to considerable pollution. Watchmen are appointed in many places, but this mode of protection is unreliable, and, in my opinion, a waste of money. The question of water supply in villages is a difficult one. Piped supplies are possible only in the larger unions and even this is a question of years. The only hope for non-union villages is wells, and all efforts should therefore be concentrated in providing wells and plenty of them in convenient centres, the use of tanks, rivers and irrigation channels should be discouraged as much as possible as they are the most fruitful sources of cholera and other water borne diseases, as it is impossible to keep them free from contamination. Before constructing wells permanently care should be taken to test the quality and quantity of water available.

MADRAS VACCINATION REPORT

This report is twofold, one part is the report on the work of the vaccine section of the King Institute and the other the report on vaccination in the Presidency for 1910-11.

The two features in the first report are the failure of the supply of calves and the lowered percentage insertion success of the lymph.

Capt W. A. Justice, I.M.S., writes as follows—

The poor success may be attributed to the following—

(a) Short supply of calves and the want of a reserve due mainly to the restrictions imposed on contractors and to the occurrence of tick fever amongst the calves. During 1910 we only escaped a total breakdown by our having had a stock of vaccine collected which was used. In 1910-1911 the calves, we were able to obtain, were in very poor condition and these would have been refused had others been available, being unable to pick and choose, we had to take and vaccinate them at once without preparation.

(b) Doubtless the exceptionally hot weather of 1910 had a great deal to do with the rapid deterioration of the virus.

(c) The want of a reserve stock of vaccine accumulated during the cool weather to tide over the hot weather.

(d) Deterioration of the seed stock.

(e) The want of a refrigerating plant. The present method of storing the vaccine in an ice box can only be regarded as a makeshift and is unreliable.

(f) The frequent changes in the officer in charge of the Vaccine Section and ultimately the removal of the Assistant Director on special duty cannot but have affected the efficiency of the staff.

I do not consider the low percentage of success was in any way due to bad work by the Vaccine staff as the poor success was distributed throughout the whole Presidency not to one particular part, hot places, however, suffering to a greater degree.

The supervision of the section during the year has caused us great anxiety and thought, and our efforts to improve it have been unremitting.

After giving tables, Capt Patton writes as follows—

"Tables 5 and 6 show the percentage rate of success arranged according to the several months of the year and that obtained by the vaccinators in the various districts and it will be seen that there is a marked drop from 91.74 per cent last year to 87.80 per cent this year. It must be admitted the percentage of successes does not compare favourably with the results obtained in other countries, and the figure has, moreover, fallen below the average of previous years. The causes which have led to this are for the most part traceable to local conditions. The year under report was a bad one in respect to the supply of calves, the majority were poorly developed animals in which it was impossible to maintain a good strain and consequently its activity has been lowered. Numerous experiments have been carried out and many new strains have been used, but no way has yet been found which will enhance the virulence of the strains. It is hoped that when the projected scheme for maintaining a reserve of calves at Guntur comes into operation and an efficient cold store has been installed more equable result will be obtained.

The difficulty of ensuring that the vaccine is in a good condition at the time it is used by the vaccinator is an old one and has not yet been solved. There is no doubt, from a consideration of the statistics of this Institute, that if the vaccine were used under conditions comparable with those obtaining in Europe, perfectly satisfactory results would be obtained. But in a large proportion of cases the vaccine is used after an interval of three or even five days after it leaves the Institute, and during this period it is unavoidably placed under conditions most unfavourable for maintaining its virulence."

Table VII shows the duration of the storage of the vaccine during the several months of the year and it will be seen that the maximum period is 14 weeks. As there is no cold store at the Institute the vaccine is packed into ice chests and well surrounded with ice, this, however, is not satisfactory, nor is it a sure method of keeping the vaccine continuously cold. These chests are constantly being opened to renew the ice and also to remove any particular vaccine for issue. With an already weakened virus it can be well understood that still further deterioration must inevitably take place owing to the method of storage used. In addition to this there is the journey to the vaccinator and the chance that it will not be used for at least three days after receipt. From experiments carried out here it is clear that the virus does slowly lose its activity when mixed with linoline and stored as above. During the whole year glycerinated vaccine stored in the same way, but never for long periods (vide Table VIII), was issued to the Corporation of Madras and has given over 97 per cent of case successes."

Correspondence

THE RESEARCH DEFENCE SOCIETY AND ANTI VIVISECTION SHOPS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—We desire to make a special appeal, for the purpose of undoing the harm which is done by anti vivisection shops and professions. The exhibits in these shops are of a most misleading nature and the truth as to anaesthetics is carefully concealed. No operation, more than the lancing of a vein just under the skin, is allowed to be done on any animal in this country, unless the animal is under an anaesthetic throughout the whole of the operation.

It will be remembered that one of these shops, on the death of H. M. King Edward VII distributed a leaflet, suggesting that His Majesty's death was due to medical treatment.

We have, of course, received many complaints against these shops. We find that the police have no power to close them, and we can only place men outside them, to give our leaflets to passers by.

But this constant giving of literature is a heavy expense to our Society. We therefore appeal for special contributions toward this purpose. We make this appeal with confidence, for we are sure that the public recognises the grave harm which is done by these shops, especially to children. All contributions should be sent to the Hon. Treasurer, Research Defence Society, 21, Ladbroke Square, London, W.

We may, perhaps, take this opportunity of mentioning that a letter has just been received from Sir Apolo Kagwa, K.C.M.G., the Prime Minister of Uganda. It is dated from Mengo, Uganda, September 26th. I really think," he says, "that in a few years time sleeping sickness will be extinct in Uganda and people will become immune from the disease." If this happy result is obtained, it will, without doubt be due to the work done by the Royal Society Commission, who gained their knowledge on the subject by experimentation on animals.

We remain,

Yours faithfully,

CROMER,

President

SYDNEY HOLLAND,

Chairman of Committee

F. M. SANDWITH,

Honorary Treasurer

STEPHEN PAGET,

Honorary Secretary

November 1st, 1911

21, LADBROKE SQUARE,
LONDON, W.

TETANUS AND QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Through the courtesy of the Editor, who forwarded to me for perusal the manuscript of Sir D. Semple's criticism of my review, I am able to give the following reply—

(a) What effect has drilling the tabloid on the water of crystallisation of quinine by hydrochloride and what effect has compression on the spores? From any of these sources o-

moisture a concentrated solution of quinine might result. While acknowledging the importance of Semple's experiments, I still adhere to my axiom that only when in solution can a solid non-volatile toxic substance produce its toxic effect on animal or vegetable organisms.

(b) A preliminary sensitising dose of serum at an interval of 12 days is unfortunately not always necessary before a calamity may follow upon serum injections. Sir D. Semple may note the reasons why practitioners require to be cautious if he will refer to the *British Medical Journal*, 11th February, 1911, p. 292. I would refer him in particular to what is said regarding abnormal reactions often terminating fatally, after first injections of anti-diphtheritic serum. It will be noted that some of the greatest authorities on anti-diphtheritic serum are giving up the use of this serum for prophylactic purposes while advocating its use in treatment. Further, taking Sir D. Semple's own data, if immunity last for two to six weeks after injection of anti-tetanic serum and if reinfection or relapse occur after two to six weeks, the original dose of serum has time to produce super-sensitiveness to the second dose required preliminary to quinine treatment of the infection or relapse.

(c) "A minimum lethal dose for a guinea pig or rabbit of a certain weight is not necessarily a lethal dose for other guinea pigs or rabbits of the same weight." This quotation proves my point. One cannot speak of a minimum lethal dose for experiments carried out on one species of animal under similar conditions; there can be only one such dose which can, moreover, be determined to a remarkable degree of accuracy, and it ought to be called the minimum lethal dose. The minimum lethal dose for guinea pigs must necessarily be fatal to all guinea pigs—the experiments being carried out under similar conditions. The minimum lethal dose must, of course, be expressed as so much toxic substance per unit weight of animal. The minimum lethal dose for guinea pigs need not necessarily be the same as that for rabbits. As pointed out in my review, Sir D. Semple's conclusions as to minimal lethal doses are quite misleading so long as unqualified by a statement of the dilutions of quinine employed. I grant the convenience of "1 grain to 1 c.c.," but many more things have to be considered than convenience. This solution is twice as dilute as is usually employed for quinine injections in man and twice as strong as is usually given to man by the mouth. Further, quinine preparations sold in grains are generally intended for clinical use, and preparations for clinical use have often been discovered impure (containing other alkaloids of cinchona bark besides quinine) and even adulterated. It is generally accepted amongst scientific workers that the metric system of weights and measures has decided advantages over other systems or combinations of systems.

(d) Regarding the question of embolism, it would have been far more convincing if Sir D. Semple had employed concentrated solutions of a dose of quinine which is admittedly non-lethal. I am confident he would find that deaths occur very unexpectedly even under such circumstances, and consequently that death cannot be due merely to "the amount of quinine given at a single dose." Not only in my own hands but also while watching other experimenters injecting quinine intravenously in rabbits, death has been observed to follow (quite unexpectedly and "within one minute") doses of quinine far below the minimum lethal intravenous dose. Death under such circumstances seems to be due either to embolism or shock owing to the quinine solution being too concentrated. A solution of 1 in 200 is very irritating even to mucous membranes; let alone the *intima* of blood vessels, as those who have experience of quinine enemata know.

It may interest Sir D. Semple to know that I have injected intravenously in rabbits without any ill effects following doses of quinine quite as large as he has found to be invariably fatal. I find from old notes in my possession that I have given 0.3 gramme of quinine alkaloid per kilo of rabbit "without any ill effects being observed to follow." This dose is roughly $\frac{1}{2}$ grain per kilo or $\frac{1}{2}$ grain per 1500 grammes, and the alkaloid contains considerably more anhydrous quinine base than the bi-hydrochloride does. This difference in our results is probably explained by (1) the alkaloid being much less soluble than the bi-hydrochloride and therefore necessarily less irritating and less liable to produce shock, and (2) the alkaloid, under the special conditions employed during injection being incapable of causing thrombosis. In my opinion a much larger dose of quinine than $\frac{1}{2}$ grain per kilo, can be safely injected intravenously into rabbits if the solutions are sufficiently dilute.

(e) This is a trivial point. My meaning might have been more apparent had I said "state" instead of "show" and "justifiable" instead of "necessary." By no means all, with an extensive experience in treating malarial fever, will resort to hypodermic injections of quinine when ordinary methods of administration fail.

THE REVIEWER

COVERING

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Your correspondent in the November number of the *Indian Medical Gazette*, who asks if helping a native midwife would be considered unprofessional conduct by the General Medical Council, raises an interesting point. I think, he will find that the word used by the Council is "unregistered" and not "unqualified." Now practically the whole of the I S M D, the Civil Assistant Surgeons and the Sub Assistant Surgeons are unregistered. Most of them do not possess registered qualifications entitling them to registration. As far as I can see, every I M S man in the service is technically "covering" unregistered and unqualified practitioners. Further, I personally am frequently called into consultation by a private practitioner whose sole qualification is "failed L M S," am I therefore guilty of unprofessional conduct in seeing cases with him? At present I do not think we have much to fear. What our condition will be as regards private native doctors of the "failed L M S" class, when the proposed "Medical Registration" bill for India is passed, is another matter.

Yours, etc.,

CIVIL SURGEON

P S.—Wellcome's Medical Directory for 1911, page 301, says "Infamous conduct" is held by the Council to include the employment of an unqualified assistant or the "Covering" of an unregistered practitioner in any mode whatever.

CASE OF CYSTICERCUS CELLULOSÆ

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The interest of the following case as an addition to the cases of *Cysticercus Cellulosæ* published encourages me to attempt its publication.

The patient was a low caste South Indian Hindu cooly admitted to hospital in August 1910 for weakness of the lower extremities.

Condition on Admission.—A well-nourished man about 35 years old. He could both stand and walk but complained of being very quickly tired and that his legs were painful after slight exertion. Sensation normal in the lower limbs. Knee jerks could not be obtained. Muscular power fair. His intelligence was that normal to a man of his description. With the exception of disease of both eyes and the muscular condition to be described his organs appeared to be healthy, both eyes were blind, the left from the effects of an injury four years before the right from recent extensive corneal ulceration. Scattered all over the body but more particularly in the muscles of the calves were numerous, hard slightly painful nodules about the size of small beans. 56 were counted by the Sub Assistant Surgeon in charge of the ward. There were no nodules under the tongue and the nodules were larger than those usual in trichinellosis. Yet that was the diagnosis first made and a nodule was excised for microscopic examination. Within this excised nodule a scolex of *Tænia Solium* was easily detected. An examination of the stools was made but *tænia* ova were not found. The patient being blind remained in hospital, but beyond the fact that he was not capable of very active exertion there were no signs of real illness. He ate and slept well and took an active part in most of the petty ward quarrels. In November he fell sick with an attack of lobar pneumonia and died.

I found the following on post mortem examination.

The right lung was the seat of lobar pneumonia of the lower lobe. At the apex of this lung were one or two small cavities lined with fibrous tissue. These may have been the remains of cysticercus cysts but there were no scolices. The left lung was normal. In the heart were numerous cysts situated both superficially beneath the pericardium and also deeply embedded in the muscle substance. The majority of these cysts contained these scolices. Apart from the presence of these cysts the heart appeared healthy. The abdominal organs with the exception of the pancreas were healthy. The pancreas was large and hard and covered with numerous areas of fat necrosis, similar areas were present in the fat of the neighbouring omentum and mesentery. Within the substance of the pancreas were a fair number of cysts. The gall bladder contained a few small biliary calculi. The brain was studded with cysticercus cysts. Thirty three were counted just beneath the pia mater upon the right cerebral hemisphere and in the deeper parts of the brain they appeared to be equally numerous.

Scattered throughout all the voluntary muscles examined, cysts were found in great abundance. In the specimens of the right calf muscles dissected and kept as a museum specimen—26 can be counted. No cysts were found in the eye balls.

Remarks—The diagnosis of cysticercus cellulosa was no doubt correct for the scolices from the cysts were in every way identical with those of tenuisolum. It is probable that the infection was from food as the man admitted that he ate pork whenever the opportunity offered. The case is of great interest owing to the extraordinary number and wide distribution of the cysts. The absence of cardiac and cerebral symptoms is curious considering the extent of infection of both heart and brain found after death.

I am thankful to Captain A. Whitmore, M.B., F.M.S., for permission to publish the notes of the case.

Yours sincerely,

C. S. KRISHNASWAMI,

ASSISTANT SURGEON,

General Hospital, Rangoon

THERAPEUTIC NOTICES

ALTHOUGH the dangers attending the use of the toothbrush have only lately received much notice Dr. F. W. Andrews long since called attention to the importance of properly cleansing the mouth. He pointed out that the saliva contains a larger number of micro organisms than the worst sewage, that streptococci and staphylococci are amongst the most numerous of these and that they are found to pass into the air in loud talking or coughing. Dr. Lawson Gordon who conducted a large number of experiments in this connection found that five minutes gargling with chloro water, 1 per cent IZAL or 2 per cent solution of permanganate of potash reduced the number of organisms in the saliva for more than an hour to something like a twentieth of their original number. It would seem that a few minutes gargling on rising in the morning and before going to bed at night is a measure strongly to be recommended to those who are careful of their health. It would be interesting, too, to note the efficacy of gristle "drill" in schools during diphtheria epidemics on the lines of the tooth cleansing lessons lately introduced by a number of school medical officers.

MERCOR'S Annual Report on all new drugs and therapeutical preparations is to hand, and is usual as a mass of carefully compiled information—useful to all medical men.

THE Cleveland Press, Chicago, announce a new volume on INJURIES OF THE EYE by Dr. H. V. Wundermann, whose name has become known to our readers by his share in the discussion over Smith's operation. It will be a practical volume of diagnosis and treatment and has special reference to forensic procedures in connection with eye accidents.

MESSRS. BAILLIÈRE, TINDALL & CO. announce the publication of the 4th Report of the Wellcome Tropical Laboratory, Khartoum. The report will be one of unusual interest and value.

THE firm of Veltor Pisani of Naples have put on the market an elegant saline preparation called IODOSALINA. Its formula is Glauber Salts 98 per cent, Iodine 5 per cent and Sodium bicarbonate 15 per cent. It is certainly a pure and simple depurative, and must be very useful in obesity and gouty affections and in the uric acid diathesis, and as a cooling agent in the hot weather.

FOR use in eye work Messrs. Burroughs Wellcome & Co. are issuing 'EPININE' as a 'Tabloid' Ophthalmic product. 'Epinine' as is widely known is a synthetic substance having a pharmacological action similar to that of the suprenal active principle, with the added advantages of greater stability and more prolonged action on the blood pressure. When instilled into the eye in 1 in 1000 solution it produces marked and sustained pallor of the conjunctival mucous membrane. It has already given good results in ophthalmic practice, and its preparation as a 'Tabloid' Ophthalmic product, easily applied to the eye, should lead to an extension of its use.

'Tabloid' Ophthalmic 'Epinine' is put up in tubes of 12 products, each product containing 0.006 grammes of 'Epinine'.

MESSRS. B. K. PAUL & Co., of Calcutta, send us specimens of a new preparation entitled JELINA LAXATIVE, which is said to be composed of phenolphthalein, whatever that may be. The lozenges are elegantly got up, sweet and palatable.

TURIN EXHIBITION AWARDS

MESSRS. BURROUGHS WELLCOME & Co. have secured no less than thirteen awards—eight grand prizes, two diplomas of honour, and three gold medals—for their exhibits at the Turin International Exhibition. This probably constitutes a world's record in awards received by a single firm at an Exhibition open to all nations.

THE worth of a "Grand Prix" depends chiefly upon the character of the exhibition which awards it. In the case of the International Hygiene Exhibition at Dresden—under the patronage of H. M. the King of Saxony—the honour is a genuine one and represents the highest medical opinion in Europe. It is interesting to note, therefore, that the only Grand Prix awarded in the pharmaceutical section at this Exhibition has been received against numerous competitors, by MESSRS. A. WULFING & Co., manufacturers of the well known preparations, Sinatogen, Formamin and Albulactin.

MESSRS. H. & T. KIRBY & Co., Ltd., have put on the market COLALIN, an amorphous active principle of bile. Bile is well known as an old fashioned remedy and purified ox bile exists in many Pharmacopoeias. COLALIN is an elegant preparation in tablets. Dose for adults, one tablet thrice daily. It is recommended in hepatic congestion and in the constipation of Bright's Disease.

TREATMENT OF SCARLET FEVER BY IZAL

IN view of the interest aroused by recent departures in the treatment of scarlet fever, some observations recorded by Dr. A. K. Gordon while medical superintendent of Monsall Fever Hospital are deserving of attention. He deals in particular with disinfection of the throat in severe cases of the septic type. He treated 35 patients with undiluted izal, and noted the following points—

'Firstly its application was not painful—in fact, the usual sensation was one of slight numbing of the parts and the after taste was not unpleasant. This meant that no anæsthetic was required, and also that the patient did not dread the repetition of the application. Then the statement that izal was not poisonous appeared to be true, there can be no doubt that in the large number of cases in which the method has been used some of the pure drug must have been swallowed, but I have never seen any bad effects follow. This is not the case with phenol, or mercurial preparations consequently the drug can be used with greater confidence. But the most important point to my mind, was that undiluted izal appeared to have a curious selective action on diseased necrotic tissue and did not affect healthy skin or mucous membrane. This I verified by applying it to my own throat with a swab of cotton wool, and I found that beyond a slight feeling of rawness such as had often resulted from the smoking of a strong or irritating tobacco, no result occurred, the rawness was quite transient and I could detect no change in the appearance of the mucous membrane 24 hours later.

"QUININE IN MALARIA"

IN a special article on "Malaria in Bombay," which was published in the October issue of the *Indian Medical Gazette*, Dr. C. A. Bentley states—"To make Quinine a popular remedy it must be administered in a palatable form. Although sugar coated tablets may not be quite so effective as solution of quinine, the powdered drug, or even uncoated tablets, they are very much better than no quinine at all." Practitioners are agreed that by prescribing quinine in powder form it offers many advantages over all other methods of administration. Thus obtains in the 'Pulverette' which presents the purest quinine in powder form, it being enclosed in a thin fragile shell with a coating of chocolate or sugar. On entering the stomach the powder is almost immediately liberated and the maximum therapeutic effect of the drug assured. These are issued in various shapes, round, oval or flat, they are tasteless, easily swallowed and cost no more than compressed tablets or pills. Pulverettes are obtainable from all high class chemists throughout the province of India.

STANDARDISED SUPRARENAL GLAND

"RENAGLANDIN" is standardised by using 25 c.c. of the preparation mixed with 20 c.c. of distilled water, to which three drops of tincture ferric perchloride B.P. are added, which produces an intense green colour in the preparation, and this colorimetric test must be uniform with each batch of the preparation issued. They find this standardisation specially necessary, because of the varying reports published in the Indian medical journals upon the effect of solutions of the active principles of the suprenal gland in treating the cardio paresis of plague, and considered that it was just

is necessary to have a regular standard for this preparation as for digitalis. Comparing the calorimetric system with the records received regarding different batches of their preparation submitted to specialists to be standardised by recording the sphygmographic records, they found that the variation of the colour test was quite as accurate, and very much less expensive to conduct.

Service Notes.

THE DURBAR HONOUR LIST

(MEDICAL MEN)

KCSI

Surgeon General C P Lukis CSI
Surgeon General Trevor, FMO, India

CSI

Surgeon General Banerjee, Madras
Colonel G F A Harris IMS
Lt Col Aldridge, RAMEC

KCIE

Surgeon General A M Branfoot, IMS (ret'd)

CIE

Lt Col C Macgregor IMS
Major L Rogers IMS
Lt Col E P Frenchman, IMS (ret'd)
Major H Burdon, IMS
Lt Col J R Roberts, IMS
Major F F Elwes, IMS

MVO (4TH CLASS)

Colonel J Bamber, IMS

TO BE KNIGHT

Lt Col C H Bedford, IMS

KAISER I HIND MEDALS

Gold

Major A E Walter IMS
Major A Gwyther IMS
Capt J N J Tyrell, IMS
Major W H Tucker, IMS

Silver

Lala Mathura Dass, Punjab
Subedar A. Rassah Khan
Sub Asst Surgeon Hissar Ali
Usman Nawas Khan
Shaik Ali Shutash
Mahomed Naimullah

KHAN BAHADUR

R J Kapadia, Bombay

RAI BAHADUR

Dr Upendranath Bhattacharya, Calcutta

KHAN SAHIB

Munshi Mahomed Yasin
Sayed Ali Naki
Sayed Abdul Aziz
Dr H Cawasji LM & S
Aideship Cawasji

RAI SAHEB

Girish Chunder Banerjee, Calcutta
Girish Chunder Das, Tezpur
Lala Kishan Chand, Punjab
Sobh Singh, Punjab
Satish Chandra Babin, Port Blair
Rama Rao, Madras
Mutha Golab Roy, Madras
Wadhval Madhava Menon, Avergall
P D Sawmy Pillay
Pandit Govind Gadey

I M F F FUND

We have more than once commented on this Fund and are glad to see a correspondence in the *Pioneer* on the subject. The Fund is invaluable to I M S Officers and all that anyone has a right to complain of is that we subscribers do not and have not got the full assurance or actuarial value for the

money we have subscribed. The following letter is worth reproducing —

TO THE EDITOR

SIR,—I have read with much interest the letters lately published in the *Pioneer* regarding the Indian Military Service Family Pension Funds, and am prepared to join any movement that has for its object an inquiry into the administration of these funds. All Indian Army officers are in the same position as shareholders, but have no voice in the management. An examination of the accounts published in April 1911 shows the receipts to exceed the expenditure by £773 644 in the years 1903 to 1908, and owing to the increased amount on which interest is allowed, the receipts during the current five years will probably exceed the expenditure by some £850 000. The expenses of management are put down for the five years at £1,107 11 11 in India, and £6 270 6 3 in England, or some Rs 2,900 a month in India and £1,250 a year at home. It is open to doubt if the Controller of Accounts, Eastern Command, gets Rs 500 a month extra for managing the accounts and it leaves a balance sufficiently large to pay an army of Babus at pay from Rs 80 to Rs 40 a month.

As the work at Home apparently only consists in deducting the authorised amounts from pay of officers on furlough and from pensioners and paying pensions, the emoluments appear sufficient.

If the balance, now amounting to £2,163,649, were distributed among three or four Insurance Companies and the present contributions paid to them, officers' widows would probably get better pensions than they do now and single officers would be able to get a lump sum at the age of 52 or have money to leave to their relatives.

Two cases have come to my knowledge (a) A colonel now dead, subscribed for over 30 years, paid donations and subscriptions for four sons and five daughters. At the time of his death all the sons were over 21 and all the daughters married, he must have paid altogether some £1,200 to £1,500 and not a single member of his family received any benefit. (b) A colonel, now serving, a widower with one married daughter has up to date paid some £500 to the funds and will receive nothing back. In both these cases if the money had been spent in insurance both (a) and (b) would have been entitled to at least £1,500 and £1,000 respectively on attaining the age of 52 or at death if it occurred previously. The amount paid in subscriptions by both (a) and (b) would not have provided enough to pay annuities for the widow and daughter, but it must also be remembered that the annuity to a colonel's widow is not likely to be drawn for very many years.

A credit balance of £2,163,649 seems to the lay mind quite sufficient to meet any abnormal increase of pensioners, due to a war on a large scale, and pending such a war it would seem well within the resources of the fund, instead of accumulating some £160,000 a year, to increase the present scale of annuities by 50 per cent. Calculating from the figures given in the report dated April 1911 this would absorb about £27,400 a year, and enough would remain to be able to refund to unmarried subscribers and any others who elect to withdraw their subscriptions with interest. Enough should still remain to add some £100,000 a year to the accumulated balance.

Government generously allows interest on the accumulated balance at 4½ per cent a year, but in reality is not called upon to pay anything as the amount received in subscriptions, donations, etc. exceeded the payments by £378,100 for the five years 1903 to 1908.

THE following useful information is republished —

With reference to the correspondence ending with Mr Stephenson's letter No 10901, dated the 3d October 1910, I am directed to forward a copy of a letter from the Sanitary Commissioner with the Government of India, No 1493 dated the 29th June 1911, and to say that the Government of India have approved of the revised procedure therein suggested for the selection of officers to attend the next malaria class at Amritsar. I am to request that it may be arranged that applications to attend the class which are approved by you may be forwarded to the Sanitary Commissioner with the Government of India.

2 The officers and subordinates attending the next and all future malaria classes, and their *locum tenentes* will receive pay and allowances on the following terms —

(1) Officers (including subordinates) deputed —

(a) full pay and allowances including JAL and other local allowances which they were drawing immediately before their deputation,

(b) travelling allowances under the ordinary rules for the journey to and from the class, but

(c) no deputation allowance,

(2) their *locum tenentes* will get the allowances which would ordinarily be admissible to them if the officers for whom they act were absentees within the meaning of Article 6 of the Civil Service Regulations.

No 1495, dated Simla, the 29th June 1911

From—The Sanitary Commissioner with the Government of India

To—The Secretary to the Government of India, Department of Education, Simla

WITH reference to correspondence ending with Education Department endorsement No 376 Sanitary, dated the 4th March 1911, I have the honour to state, for the information of Government that at the meeting of the Central Committee for the study of malaria in India, held on the 24th May last, it was suggested that a change should be made in the method of selecting officers to attend the class of instruction held at Amritsar from time to time

2 The present procedure is for this office to inform the Government of India of the date on which a class will be assembled and for the Government of India to instruct local Governments to nominate candidates. The names of these candidates are submitted to the Government of India for approval, and this office is consulted, unofficially, as to their selection. This procedure, which was necessary in order that the officers selected for malaria investigation by local Governments might be trained before taking up their duties, has now served its purpose, and it is proposed to modify it so that any officer who is specially desirous of studying malaria may be given the opportunity of joining one of the classes

3 I would therefore, suggest that the procedure approved in Home Department letter No 2084 dated the 24th September 1908, for the selection of officers for a short course of training in clinical bacteriology and technique may be adopted in the case of the next malaria class. If this proposal is accepted, applications from officers desirous of attending should be forwarded to this office through the usual channels. The names of eight officers and eight subordinates will then be communicated to the Director of the Central Research Institute who will inform the officers concerned direct of the date by which they should report themselves to the officer conducting the class at Amritsar

4 The terms upon which officers may be deputed to these classes might be laid down definitely, and should follow those promulgated in Education Department letter No 368 374, dated the 4th March 1911, for the last class

THE following amendments to the Civil Service Regulations regarding the position of military officers in respect of leave earned by them when in civil employ are here republished

Additions and Corrections to the Civil Service Regulations
(5th Edition)

No 188

Page 8

Article 35(e)

Substitute the following for Rule 2 under this Article—

2 A military officer who has officiated in the Civil Department continuously for not less than three years is considered to be in permanent civil employ. For the purpose of reckoning the three years officiating period, the following may be included—

(a) any period of employment of an officer in Foreign Service if he has been transferred to such foreign service direct from civil employ

(b) any period of privilege leave

Furlough or leave other than privilege leave does not count towards the three years' period but it does not operate as a break cancelling past officiating service for the purposes of this rule, unless the officer has to revert to military employ in order to obtain such furlough or leave

(5th Edition, No 188, dated 1st September 1911)

Page 163

Article 605

Insert before Note 1 the following exception under this Article—

Exception—A Local Government cannot grant furlough or leave under the Military Leave Rules to a military officer, who has no substantive appointment in the Civil Department but is holding only a temporary or officiating appointment in that department, unless it is proposed to re-employ him immediately on the expiry of his furlough or leave

(5th Edition, No 188, dated 1st September 1911)

Page 163

Article 607

Substitute the following for the rule under this Article—

1 An officer proceeding on furlough or leave under Military Leave Rules forfeits, *ipso facto* his hon on any acting appointment. Consequently a military officer in civil employ, with no substantive appointment in the Civil Department, loses, on proceeding on such furlough or leave, his hon on any temporary or officiating appointment in the Civil Department that he may have held, if he has to revert to military employ in order to obtain the leave

(5th Edition, No 188, dated 1st September 1911)

THE Governor General in Council is pleased to direct the publication of the following Royal Warrant, dated the

6th September 1911 regarding promotion to the Commissioned grades in the Indian Subordinate Medical Department—

GEORGE, R I

Whereas we have deemed it expedient to alter the rank and designation of the senior officers of the Indian Subordinate Medical Department

Our will and pleasure is that Our Warrant of 12th March 1894 be hereby cancelled, and the Commissioned grades in the Indian Subordinate Medical Department shall hereafter be as follows—

I Senior Assistant Surgeon with the honorary rank of Lieutenant

II Senior Assistant Surgeon with the honorary rank of Captain

III Senior Assistant Surgeon with the honorary rank of Major

Promotions to the grade of Senior Assistant Surgeon with the honorary rank of Lieutenant or Captain shall be made according to the Regulations governing such promotion

Promotion to the grade of Senior Assistant Surgeon with the honorary rank of Major shall not ordinarily be made until after 15 years' service in the Commissioned grade

Senior Assistant Surgeons shall enjoy the precedence and other advantages attaching to their honorary military rank

They shall have authority, under the medical officers to command members of their own department hospital attendants patients in military hospitals, and such warrant officers, non-commissioned officers and men as may be attached thereto (without their own officers) for hospital duty

Given at our Court at Balmoral this twenty sixth day of September 1911 in the second year of Our Reign

THE Viceroy and Governor General has been pleased to make the following appointment on His Excellency's Personal Staff, with effect from the 3rd November 1911—

To be Honorary Surgeon

Brevet Colonel R H Futh, R A M C, *vice* Colonel R H Forman, M B, R A M C retired

MAJOR A A GIBBS Indian Medical Service to be a Medical Storekeeper to Government *vice* Lieutenant Colonel P W O'Gorman Indian Medical Service, vacated, with effect from the date of assuming charge

LIEUTENANT COLONEL DIROM GRAY CRAWFORD, M B, Indian Medical Service, Bengal has been permitted by the Most Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 5th December 1911

We need hardly say that the *Indian Medical Gazette* heartily regrets the retirement of Colonel Crawford. For 40 years past he has been a regular contributor, the first article by him which we have come across was on a subject not much to the fore, that is the nature of the chronic ulcers or sores which he described as occurring among the men of the XV Sikhs at Delhi in 1881 (*I M G*, vol xix, p 218)

MILITARY ASSISTANT SURGEON S J V FOX, House Surgeon Howrah General Hospital is appointed temporarily to act as a Civil Surgeon of the second class and is posted to Maabhum, with effect from the forenoon of the 5th October 1911

MILITARY ASSISTANT SURGEON W J GILLSON, Officiating Assistant Apothecary, Medical College Hospital Calcutta, is appointed, with effect from the forenoon of the 4th October 1911, to act as House Surgeon, Howrah General Hospital, during the absence on deputation, of Military Assistant Surgeon S J V Fox, or until further orders

MILITARY ASSISTANT SURGEON W J MARSHALL, Resident Medical Officer, Eden Sanatorium and Hospital, Darjeeling, is appointed substitutively *pro tempore* to be Assistant to the Surgeon Superintendent, Presidency General Hospital, *vice* Military Assistant Surgeon A V Eates

MILITARY ASSISTANT SURGEON H L O FLEMING attached to the Presidency General Hospital, is appointed to be Resident Medical Officer, Eden Sanatorium and Hospital, Darjeeling *vice* Military Assistant Surgeon W J Marshall, transferred

CAPTAIN A H PROCTOR, I M S, Officiating Resident Surgeon, Medical College Hospital, Calcutta, acted as Resident Physician of that institution in addition to his own duties, from the 17th July to the 16th August 1911, both days inclusive

THE services of Captain W S Neale, I M S, are placed temporarily at the disposal of the Government of Burma for employment on plague duty

THE services of Lieutenant Colonel B B Grayfoot, M D, I M S, are repiced at the disposal of the Government of Bombay

PRIVILEGE leave for three months, in combination with furlough for two months and study leave for seven months, under Articles 233 (i) 260 303 (ii) and 308 (b) of the Civil Service Regulations, and Rules 2 and 6 of the Study Leave Rules, is granted to Major W H Kenrick, L R C P, M R C S, I M S, Officiating Sanitary Commissioner, Central Provinces, with effect from the 11th November 1911, or the subsequent date on which he may avail himself of it

LIEUTENANT C NEWTON DAVIS to be Specialist in Otolaryngology and Rhinology, with effect from 1st November 1911

REWARDS—Good Conduct and Meritorious Service —With reference to India Army Order No 478 of 1911, the undermentioned Sub Assistant Surgeons of the Indian Subordinate Medical Department are granted the Meritorious Service Medal, with annuity under the provisions of paragraph 993 *et seq*, Army Regulations, India, Volume I — 1st Class Sub Assistant Surgeon Haribans Lal Bengal Establishment *vice* No 643, 1st Class Sub Assistant Surgeon Muhammad Zamin Khan Bengal Establishment, promoted, with effect from the 1st July 1911

1st Class Sub Assistant Surgeon Sant Singh, Bengal Establishment, *vice* No 644 1st Class Sub Assistant Surgeon Raghunath Bengal Establishment, promoted, with effect from the 6th July 1911

1st Class Sub Assistant Surgeon Bhagwan Singh, Bengal Establishment, *vice* No 651 1st Class Sub Assistant Surgeon Mahammad Azim, Bengal Establishment, deceased, with effect from the 3rd August 1911

LIEUTENANT P B BHARUCHA to be Specialist in Advanced Operative Surgery 2nd (Rawalpindi) Division, with effect from 10th September 1911

CAPTAIN H B SCOTT, I M S, Special Plague Medical Officer, Meiktila and Langoing Divisions is placed in charge of the Civil Surgeoncy of Shwebo, in addition to his own duties, in place of Captain H H Norman, L A M C, as a temporary measure till the arrival of Captain W Egan, M B, R A M C

CAPTAIN W EGAN, M B R A M C, is appointed to hold collateral charge of the Civil Surgeoncy of Shwebo in place of Captain H B Scott, I M S

CAPTAIN C O C SHAW, M D, I M S, whose services have been placed temporarily at the disposal of this Administration by the Government of India Home Department's Notification No 1053, dated the 19th October 1911, is appointed to officiate as Civil Surgeon and posted to the Raipur District

PRIVILEGE leave for nineteen days, under Article 260 of the Civil Service Regulations, was granted to 2nd Class Military Assistant Surgeon J Doyle, Civil Surgeon, Balaghat, with effect from the 29th August 1911

CAPTAIN M F REANEY, M B, D P H O B, M R C S, L R C P, I M S, on special duty at Pachmarhi, is reposted to the Wardha District as Civil Surgeon

On relief by Major T G N Stokes, M B, I M S, of the office of the Sanitary Commissioner Central Provinces, Major W H Kenrick, L R C P, M R C S, D T M, I M S, is placed on special malaria duty in the Province

Lieutenants to be Captains
Dated 1st August 1911

Aitchbald Campbell Munro, M B
Ram Nath Chopra, M B
Alfred Geddes Tresidder, M B
Gordon Gray Jolly, M B
Alister Agyll Campbell McNeill, M B
Robert Long Gamlen, M B
Abdus Sattar Khan
George Frederick Graham, M B
Maneck Dhunjishaw Wadia
Taylor David Murison
Sohrab Shapoorji Vazifdar
John Joseph Harper Nelson, M B
Edward Selby Phipson, M B
Fleet Floyd Strother Smith, M B
Arthur Jessop Symes, M B
Thomas Crawford Boyd

DR W NUNAN is appointed to act as Police Surgeon, Bombay, during the absence of Dr S A Powell

MAJOR C O MURISON, I M S, Superintendent of Maternity in the district of Kolaba, is appointed, under section 12 of the Code of Criminal Procedure 1893, to be a Magistrate of the second class in that district and is invested with the following additional powers being some of the powers specified in the fourth schedule to the said Code—

Power to make orders prohibiting repetitions of nuisances (section 143)

Power to make orders under section 144

Power to hold inquests (section 174)

Power to take cognizance of offences upon complaint and upon police reports (section 190 (1) (a and b))

2 Major Murison is also invested with jurisdiction to try cases arising under section 62 of the Bombay District Police Act IV of 1890

HIS EXCELLENCY THE GOVERNOR in Council is pleased to appoint Captain H B Stanger Leathes, I M S, to act as Personal Assistant to the Surgeon General with the Government of Bombay in addition to his own duties during the absence on deputation of Captain J L Lunham, M B, B Ch (R. U. I), D T M & H (Cantab), I M S, on pending further orders

GOVERNMENT Notification No 5995, dated the 10th October 1911 and so much of Government Notification No 5740 dated the 26th September 1911, as relates to the appointment of Captain W S Nealon, I M S, are cancelled

CAPTAIN A MURPHY, M B, I M S, was appointed to act as Civil Surgeon, Ahmednagar, in addition to his military duties, from the 25th September 1911 to the 2nd November 1911

LIEUTENANT COLONEL J CRIMMIN, V C, C I E, D P H, I M S, on reversion, to be Presidency Surgeon, Third District, with attached duties

MAJOR E F G TUCKER, M B, R S (Lond), M R C P (Lond), I M S, on relief to act as Presidency Surgeon, Second District and Marine Surgeon and Superintendent, Lunatic Asylum, Colaba

MAJOR J L MARJORIBANKS, M D, D P H, I M S, on relief, to be Deputy Sanitary Commissioner, Western Registration District

CAPTAIN H C BUCKLEY, I M S, was appointed to be Plague Medical Officer, Rohtak, on 22nd September 1911

WITH effect from the date Lieutenant Colonel J Morwood, I M S, returned from leave, Lieutenant Colonel J M Crawford, I M S, Civil Surgeon, ceased to officiate in the first class

MAJOR G MOI C SMITH, I M S, acts for Major A G Melville, I M S, as Professor of Materia Medica, Lahore Medical College

LIEUTENANT COLONEL A COLEMAN, I M S, Civil Surgeon of Rawal Pindi, got one month's privilege leave from 9th October 1911

CAPTAIN C A GILL, I M S, acted for Lieutenant Colonel Coleman as Civil Surgeon, Rawal Pindi

CAPTAIN A W OVERBECK WRIGHT, I M S, is posted as Supdt, Central Lunatic Asylum, Agia, *vice* Major Cochrane, I M S, F R C S, granted leave

CAPTAIN A W HOWLETT, I M S, is posted as Superintendent, Central Prison, Agia, *vice* Captain Overbeck Wright, I M S

MAJOR J L MACRAE, I M S, on return from furlough on 29th September, was posted as District Medical Officer, Kurnool

MAJOR D C KEMP, I M S, returned from furlough on 5th December 1912

MAJOR T S HORLEY, I M S, has been transferred to be District Medical Officer, Madura

CAPTAIN E C C MAUNSELL, I M S, joined the Madras Civil Medical Department on 12th October 1911

CAPTAIN J W ILLIUS, I M S, has got two years combined furlough and study leave for 2 years up to 18th October 1913

CAPTAIN F C ROGERS, I M S, was granted combined furlough for 1 year and 14 days from 1st after 9th November 1911

CAPTAIN J P CAMERON, I M S, is due back from furlough on 27th February 1912

MAJOR CORNWALL'S leave for 31 months is made up of 2 months 29 days privilege leave, 1 year 9 months and 21 days furlough and 7 months study leave

WHILE Captain A G McKendrick I M S, acts for Major S P James, I M S, as Statistical Officer at Simla Captain D S Patton, I M S, acts as Director of the King Institute at Guindy

MAJOR M CORRY, I M S, made over charge of the duties of Superintendent of the Ludhiana District Jail to Captain J G Swan, I M S, on the forenoon of the 1st November 1911

ASSISTANT SURGEON HIRA SINGH made over charge of the duties of Superintendent of the Dehra Ghazi Khan District Jail to Captain R T Wells, I M S, on the afternoon of the 9th October 1911

CAPTAIN R T WELLS, I M S, made over charge of the duties of Superintendent of the Dehra Ghazi Khan District Jail to Hira Singh, Assistant Surgeon, on the afternoon of the 15th September 1911

LIEUTENANT COLONEL A COLLMAN, I M S, made over charge of the duties of Superintendent of the Rawalpindi District Jail to Captain C A Gill, I M S, on the forenoon of the 10th October 1911

ON return from the leave granted to him in Punjab Government Notification No 324, dated 8th April 1911, Major L S Peck I M S, assumed charge of the office of Civil Surgeon, Jullundur, on the forenoon of the 10th October 1911, relieving Captain H C Keates, I M S, transferred

ON transfer from Jullundur Captain H C Keates, I M S, assumed charge of the office of Civil Surgeon Dehra Ghazi Khan, on the forenoon of the 19th October 1911 relieving Captain R T Wells, I M S, transferred to plague duty

ON return from leave Captain H Watts, I M S, is posted to Lahore as Plague Medical Officer

ON return from leave Captain J E Clements I M S, reported his arrival at Bombay on the 24th October 1911, and resumed charge of the duties of Superintendent Central Jail, Montgomey on the forenoon of the 30th idem, relieving Military Assistant Surgeon H V W Cox

CAPTAIN W W JEUDWINE, I M S, made over charge of the duties of Superintendent of the Multan District Jail to Captain M Corry, I M S, on the afternoon of the 6th November 1911

CAPTAIN C A GILL, I M S, made over charge of the duties of Superintendent of the Rawalpindi District Jail to Lieutenant Colonel A Coleman, I M S, on the forenoon of the 10th November 1911

BHAI DAIIP SINGH made over charge of the duties of Superintendent of the Sialkot District Jail to Lieutenant Colonel D T Lane, I M S, on the afternoon of the 10th November 1911

ON return from the combined leave granted to him in Punjab Government Notification No 842 dated the 4th November 1909 Captain J G G Swan, I M S, reported his arrival at Bombay on the forenoon of the 27th October 1911, and assumed charge of the office of Civil Surgeon, Ludhiana, on the forenoon of the 1st November 1911, relieving Captain M Corry, I M S, transferred

CAPTAIN J B CHRISTIAN, I M S, has been appointed Civil Surgeon of Tippera from 27th October

FIRST CLASS Military Assistant Surgeon W St M Hefferman has been permitted by His Majesty's Secretary of State for India to return to duty within the period of his leave

MAJOR C E WILLIAMS I M S, has been granted by His Majesty's Secretary of State for India a further extension of furlough for fourteen days

ON return from leave Captain F V O Bent, M D I M S, is posted to the Civil Medical charge of the Shwabo District in place of Captain W Egan, M B, R A M C

CAPTAIN J HUSBAND, I M S, to be specialist in Advanced Operative Surgery with effect from 1st October 1911

THE following I M S Officers recently obtained the fellowship of the Royal College of Surgeons at Edinburgh, viz, Captain E W C Bradfield I M S, Captain H P Cook, I M S, Captain L J M Deas, I M S, Major A N Fleming, I M S, and Captain C H Reinhold, I M S

CAPTAIN M L PURI, I M S, has passed the Lower Standard in the Bruchin Language

LIEUTENANT COLONEL C DULR, M B, F R C S, I M S, Civil Surgeon Simla (West), is granted privilege leave for thirty six days with effect from the 20th December 1911 on the subsequent date on which he may avail himself of it

CAPTAIN C A Gill, I M S, is appointed to officiate as Civil Surgeon, Simla (West), during the absence on leave of Lieutenant Colonel C Duer, M B, F R C S, I M S

MAJOR S P JAMES, M D, I M S, is placed on special duty in connection with the investigation of yellow fever in its endemic area in Central America, with effect from the 23rd October 1911

CAPTAIN M MACKFLEWIE, I M S, Officiating Civil Surgeon Darbhanga, is allowed privilege leave combined with furlough for one year, viz, privilege leave for three months under article 260 of the Civil Service Regulations, and furlough for the remaining period under Article 308 (b) of the Regulations, with effect from the date on which he may be relieved of his duties

MAJOR J W F RAIT, I M S, has been granted by His Majesty's Secretary of State for India an extension of furlough for four months

MAJOR J W D MEGAW I M S is allowed privilege leave combined with furlough for 15 months, viz, privilege leave for three months under article 260 Civil Service Regulations, and furlough for one year under article 308 (b) of the Regulations with effect from the 3rd December 1911, on any subsequent date on which he may be relieved of his present duties as Officiating Professor of Pathology, Medical College, Calcutta

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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Alderson's Dental Anasthetics 3s J Wright & Sons
Matson's Clinical Immunity and Sero Diagnosis 7s 6d Baillière, Tindall & Cox
Rosa's Unlucky Surgery (8th Ed.) 2s Baillière Tindall & Cox
Lt Col F Helm's Prevention of Disease & Inefficiency Pioneer Press
Morelet's Conduct and its Disorders 10s Macmillan & Co
Jardine's Delayed and Complicated Labour 7s 6d H Kimpton
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W H Howell's Physiology 4th Edition (1911) W B Saunders & Co
Welcome Laboratory Report Khartoum Baillière Tindall & Cox
D Fordyce's Care of Infants, &c F & S Livingstone 1s 6d
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Swaney & Werner, Diseases of Eye (10th Edition) H K Lewis
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Mahomed Sharif's Malaria fever, in Urdu Lahore Press
Surgical Work at Rangoon General Hospital

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Original Articles.

SOME NOTES ON THE PROPOSED BILL TO CONSOLIDATE AND AMEND THE LAW RELATING TO LUNACY

BY M J SHAW,

CAPTAIN, I M S,

Supdt, Central Asylum, Rangoon

In the following short notes on the proposed Bill I have endeavoured to represent the points which are, I think, of importance and interest to the medical man in India. The Draft Bill, as it at present stands, appears to be the result of the lucubrations of lawyers alone, and it is based largely on the English Lunacy Law, many, I think, very necessary points in the latter being, however, omitted.

The fact that India is a country of big distances has not, I think, been quite realized. Magistrates and doctors here are few and far between as compared with England, and the catchment area of an asylum in India or Burma is incomparably greater than that of an English Asylum.

In England if a Magistrate is unwilling for any reason to sign a Reception Order—well there are many others to apply to—whereas in this country as a rule only one is available for any given case. In these notes I have only remarked on the clauses which I think contain noteworthy defects.

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5 (1)—An application for a reception order shall be made by petition to the Magistrate within the local limits of whose jurisdiction the alleged lunatic ordinarily resides shall be in the form prescribed and shall be supported by two medical certificates on separate pieces of paper one of which shall be from a medical officer.

(2)—The petition shall state whether a previous petition has been presented as to the alleged lunatic or not, and if a previous petition has been made a copy of the order on that application shall be attached to it.

(3)—No application for a reception order shall be entertained in any area outside the Presidency towns unless the Local Government has, by notification in the local official Gazette, declared such area to be an area in which reception orders may be made.

7 (1)—Upon the presentation of the petition, the Magistrate shall consider the allegations in the petition and the evidence of lunacy appearing by the medical certificates and whether it is necessary for him personally to see and examine the alleged lunatic.

According to the wording of the draft Bill a Magistrate is empowered to override the opinion of two medical men who have separately certified that a certain person is insane.

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(2)—If he is satisfied that a reception order may properly be made forthwith, he may make the same accordingly.

(3)—If he is not so satisfied, he shall fix a date (notice whereof shall be given to the petitioner) for the consideration of the petition, and he may make such further or other inquiries of or concerning the alleged lunatic as he may think fit.

8—The Magistrate, if not satisfied with the evidence of lunacy appearing from the medical certificates, may visit the alleged lunatic at the place where such lunatic may happen to be.

9—The petition shall be considered in private and no one except the petitioner the alleged lunatic (unless the Magistrate shall in his discretion otherwise order) any one person appointed by the alleged lunatic for that purpose, and the persons signing the medical certificates accompanying the petition, shall be present at the consideration thereof.

10 (1)—At the time appointed for the consideration of the petition, the Magistrate may either make a reception order or dismiss the petition, or, if he thinks fit may adjourn the same for future evidence or inquiry, and may make such order as to the payment of the costs of the inquiry by the person upon whose application it was made, or out of the estate of the alleged lunatic if found to be of unsound mind, or other wise, as he may think proper.

(2)—If the petition is dismissed, the Magistrate shall record in writing his reasons for dismissing the same and shall deliver or cause to be delivered to the petitioner a copy of such order.

The opinion of a Magistrate on such a purely medical subject should receive no legal recognition. Should a certified insane during a lucid interval be interviewed by the Magistrate, the latter official might, under the proposed Bill, refuse to issue a Reception Order. It must be remembered that according to clause 5 one of the medical certificates must be signed by a medical officer as defined in clause 3 (7). Too much is left to the whim of the Magistrate, who assumes the position of an expert in insanity, if he takes it on himself to disagree with two medical opinions and a delay in the placing of the patient under treatment is involved by his action.

Clause 7 (3)—I am not able to see the grounds on which a Magistrate can logically refuse to accept evidence of insanity as insufficient when two medical certificates are before him, each shewing that in the opinion of the doctor who has signed it that the person to whom it refers is a lunatic, *vide* form 3, page 25 of the Draft Bill. The medical certificates are considered as evidence, *vide* clause 18 (3) of the Draft Bill. Any delay in placing an insane under treatment is to be absolutely condemned. The Magistrate is not necessarily in a position to argue that their reasons for coming to this conclusion are in any way insufficient. This should be a matter for the Asylum Superintendent to deal with after the admission of the insane to the Asylum. Should the medical certificates not fulfil the requirements of clause 18 they can be amended then in accordance with clause 25.

Certainly if the Magistrate is given this power he should be compelled by the Act to fix an early date say within 7 days after the presentation of the petition for its further consideration as is done in England. I therefore think that the words "within 7 days after the presentation of the petition" should be inserted after the word "date" in line 1.

Clause 9—I think that after "shall" in line 8 the words "without leave" should be inserted. The attendance of the persons who have signed the medical certificates should not be insisted on as a matter of routine for various obvious reasons and especially as the medical certificates are evidence, *vide* clause 18 (3).

Clause 10 (1)—In this clause as in clause 7 (3) the magistrate is given unlimited power of adjournment. I see no reason for this clause at all, but a similar one exists in English Lunacy Law, except that the magistrate's power of adjournment is limited to a period not exceeding 14 days from that date. Should this clause

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be retained I think the words 'for any period not exceeding 14 days' are necessary after the word 'same' in line 5"

It will be observed that taking into consideration Clauses 7 and 10 a magistrate is empowered to prevent the proper medical treatment of a person who is considered by two medical men to be insane for a quite indefinite period according to the draft bill. Such delay would of course happen very rarely, but it is possible I do not think it should be legalised.

Clause 14—Whenever any person is brought before a magistrate under the provisions of subsection (1) of section 13, the magistrate shall call in a medical officer and shall examine such person, and shall make such other inquiries as he thinks advisable, and if the magistrate is satisfied on personal examination or other proof, that such person is a lunatic and a proper person to be detained, and if the medical officer who has been called in signs a medical certificate with regard to the lunatic, the magistrate may make a reception order for the admission of such lunatic into an asylum and shall send him in suitable custody to such asylum.

Provided that, if any friend or relative of any lunatic, who is believed to be dangerous, shall enter into a bond with or without sureties for such sum of money as the magistrate thinks fit conditioned that such lunatic shall be properly taken care of, and shall be prevented from doing injury to himself or others the magistrate, instead of sending him to an asylum may, if he thinks fit, make him over to the care of such friend or relative.

Provided also that if any such friend or relative shall desire that the lunatic may be sent to a licensed asylum instead of the public asylum of the province, and shall engage in writing to the satisfaction of the magistrate to pay the cost of maintenance of the lunatic in such asylum, the magistrate may send the lunatic to the licensed asylum mentioned in the engagement.

Substitute from "shall call in a medical officer and shall examine such person" the following "shall send the person to a medical officer (appointed under clause 2-7) who shall examine such person." Insert before the word "Medical" the word "aforesaid" and delete the words "who has been called in" in line 11 of the printed Act. According to the wording of cl 14 of the Draft Act the magistrate examines the alleged insane in the presence of the medical officer who has been called in. This appears ridiculous, and in Rangoon where the Superintendent of the Asylum would probably be the designated medical officer, it would involve his being frequently called to the office of the Commissioner of Police very unnecessarily. Under the present procedure a person found wandering or considered dangerous by reason of insanity by the Police is sent to the Asylum under section 4 (proposed clause 14) for examination. If the certificate cannot be given at once application is made by the Superintendent under section 6a (proposed clause 16) (1) to the Commissioner of Police for the issue of a Detention Order authorising the detention of the person for a period of 10 days for observation and certifying under section 4 (proposed clause 14) should he be found insane. This procedure is applicable to all India and Burma substituting the words "Jail or Civil Hospital" for "Asylum" and "Magistrate" for "Commissioner of Police." It provides for the placing of the alleged insane under control and treatment as quickly as possible. Further at present in many cases the man arrives at the Magistrate's Office accompanied by his medical certificate which has been signed by the medical officer of the hospital to which he has been taken for treatment and who has found him insane. Even if a medical officer were "called in" as laid down in clause 14 he might be unable to sign a medical certificate from one examination of the alleged insane in which case the latter would be sent to him for further observation under clause 16 (1).

I do not know why the maximum observation period

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before a magistrate under the provisions of section 13 or section 15, the magistrate, at the request of the medical officer who has been called in, may, by order in writing, authorize the detention of the alleged lunatic for such time not exceeding ten days as may be, in his opinion, necessary to enable the medical officer to determine whether such alleged lunatic is a person in respect of whom a medical certificate may be properly given.

(2) The magistrate may, from time to time, for the same purpose and at the request of the medical officer, by order in writing, authorize such further detention not exceeding ten days at a time as he thinks necessary.

Provided that no person shall be detained under this section for a total period exceeding thirty days from the date on which the first order under its provision was made.

of 14 days now in force should be considered too short, in fact I have always thought it unnecessarily long.

The detention order is issued under section 6a (proposed clause 16) (1). In the great majority of cases sent in for observation the insanity is obvious. If the evidence of the insanity of an individual are so marked as to be observed by the untutored native policemen or relative, there is little difficulty in certifying as to the fact that the individual is insane. No matter what the period of observation ordered, the medical officer certifies a case of insanity directly he obtains clear evidence of the existence of the disease, but he must assume that a person is sane until proof is obtained that he is not. I am strongly of opinion that if he does not obtain such proof within 10 or 14 days he should return the individual as "sane." If he does not do so he is acting purely under the influence of the statements made as to the observed individual's behaviour before he came under his observation. I think too much attention should not be given to these statements in the absence of any signs of insanity. Lunacy legislation has been for ages directed against the acceptance as true of the unverified allegations of relatives or friends who possibly hope for the person's admission to the Asylum.

The nearest the observed individual is to sanity, the longer will be his period of observation should the suggested idea become law. The extension of the period of observation will throw the whole responsibility for the prolonged detention of an individual on the medical officer. He may declare a sane person sane after a few days observation or may cover himself by keeping the person under observation for 30 days—which will he do? I could not consider myself justified in keeping anyone under observation for 30 days and then declaring that he had been sane the whole time.

Is every medical officer to be given the power and responsibility to detain at his option persons who are not behaving in an insane manner merely because it has been alleged that they have behaved unsanely at an earlier date? The evidences of "insanity" are so much more obvious and remarkable than those of "sanity" that the latter condition is proved to exist only by the absence of the former.

I see no rational grounds on which a medical officer who has observed no signs of insanity for 10 days can ask for a further detention order. All he has observed is that the person is sane and has been so for 10 days. Why he should assume that this person is likely to show signs of

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insanity (i.e., relapse) during the next 20 days, I do not know

Detention Orders are issuable not only on Central Asylums but in the most out of the way Indian towns by the local magistrate on the local hospital or sub jail

I consider that the extension of the period of observation to a maximum of 30 days would constitute a public danger

21 A reception order, if the same appears to be in conformity with this Act, shall be sufficient authority for the petitioner or any person authorised by him, or in the case of an order not made upon petition, for the person authorised so to do by the person making the order to take the lunatic and convey him to the place mentioned in such order and for his reception and detention therein or in any other asylum to which he may be removed in accordance with the provisions of this Act, and the order may be acted on without further evidence of the signature or of the jurisdiction of the person making the order

Discharge of Lunatics

29(1) Three of the visitors of any asylum of whom one shall be a medical officer, may, by writing under their hands, order the discharge of any person detained in such asylum and such person shall thereupon be discharged

Provided that no order under this sub section shall be made in the case of a person detained under a reception order under section 12 or in the case of a criminal lunatic, otherwise than as provided by section 30 of the Prisoners' Act, 1900

(2) When such order is given if the person is detained under the order of any public officer, notice of the order of discharge shall be immediately communicated to such officer

30(1) A lunatic detained in an asylum under a reception order, made on petition, shall be discharged if the person on whose petition the reception order was made so directs in writing

Provided that no lunatic shall be discharged under the provisions of sub section

(1) if the officer in charge of the asylum certifies in writing that the lunatic is dangerous and unfit to be at large

(2) A person detained in an asylum under a reception order made under section 12, shall be detained therein until he is discharged therefrom in accordance with the military regulations in force for the time being or until the officer making the order applies for his transfer to the

ACT

REMARKS

military authorities in view to his removal to England

(3) Whenever it appears to the officer in charge of an asylum that the discharge of a person therein detained under an order made under section 12 is necessary either on account of his recovery or for any other purpose such person shall be brought before the visitors of the asylum and on the visitors recording their opinion that the discharge should be made the general or other Officer Commanding the division, district brigade or force or other officer authorized to order the admission of such persons into an asylum, shall forth with direct him to be discharged and such discharge shall take place in accordance with the military regulations in force for the time being

31 When any relative or friend of a lunatic detained in any asylum under the provisions of section 14, section 15, or section 17 is desirous that such lunatic shall be delivered over to his care and custody he shall make application to the authority under whose order the lunatic is detained and such authority if it thinks fit, in consultation with the visitors or with one of them being a medical officer and upon such relative or friend entering into a bond with or without sureties for such sum of money as the said authority thinks fit, conditioned that such lunatic shall be properly taken care of and shall be prevented from doing injury to himself or others, shall make an order for the discharge of such lunatic and such lunatic shall thereupon be discharged

This clause deals with discharge to care of relatives or friends leaves out of consideration altogether the opinion of the Superintendent who would perhaps be consulted but on whom no responsibility legally devolves I think that the words from "if officer" (lines 9 and 10) should be deleted and the following inserted in their place

"after consultation with the medical officer in charge of the Asylum" I would point out that the proposed clause 31 only differs from the old section 10 of Act XXXVI of 1858 in provision being made for a "bond" instead of an "undertaking" In reality everything depends on the Superintendent's opinion of the fitness of the patient for discharge but he is not legally responsible for his advice—in fact his advice is not required at all, which appears improper In addition the following sentence might be inserted at the end of clause 31

"Should the medical officer in charge of the Asylum be unable for any reason to recommend the discharge of a lunatic under this clause, appeal may be made to the Asylum Committee"

My reason for making this suggestion is that I find it difficult to see the necessity of obtaining the opinion of a medical member of the Committee who knows nothing of the case and acts on the opinion of the Superintendent thereby unnecessarily taking responsibility These cases are rarely brought before the Committee as a whole, it being much easier and quicker to obtain the opinion of one medical member

In this country when a suitable insane is discharged under section X (proposed clause 31) it is advisable to effect the discharge as expeditiously as possible The relative has possibly arrived from an out of the way district, and wishes to leave as soon as he can, with the insane

General — The words "Lunatic" and "Lunacy" being obsolete in medical circles and improper should be deleted and the words "Insane" and "Insanity" substituted throughout

APPOINTMENT TO THE SERVICE EXAMINATIONS

BY D G CRAWFORD, M B,

LIFUT COL, I M S, (RETD)

(Continued from page 10)

THE India Act of 1853 (Acts XVI and XVII, Vict cap 95), provides that all future admissions to the East India Company's Service, including Asst-Surgeons, after 30th April 1854, shall be by competitive examination. This law, however, was not strictly carried out, as some fifty appointments to the I M S were made by nomination between 30th April and 31st December 1854. The first competitive examination was held in January 1855, when only twenty-eight candidates appeared to compete for thirty vacancies. The examiners were Messrs Paget, Bush, Hooper, and E A Pukes. Competitive examination for the A M D was introduced in 1857, the first examination, for twenty vacancies, being held on 16th July 1857.

In 1864 a Bill was introduced by Sir Charles Wood, Secretary of State for India, to authorize the Government to appoint Assistant-Surgeons to the I M S without competition, thus partly cancelling the Act of 1853. The proposal was lost by two votes. The numbers voting, 46 to 44, look as if not much interest was taken in the matter.

It is worthy of remark that, while a nomination as Assistant-Surgeon in the I M S had for years been considered a prize worthy of competition by some of the best students in the medical schools, when the whole number of appointments was thrown open to competition, the number of candidates, twenty-eight, was less than the number of vacancies, thirty. At the second examination, held in July 1855, for fifty vacancies, fifty-five candidates competed, and forty-six were selected. From 1855 to 1860, indeed, competition for the I M S does not appear to have been brisk. It was not until 1865, after admission to the service had been suspended for nearly five years, that the competition became really severe.

From 1st October 1860 to 1st April 1865, no new admissions to the I M S were made, while the question of amalgamating the I M S with the A M D was under consideration. When the service was again thrown open to competition, early in 1865, among the successful candidates were six young Assistant-Surgeons who had just gone through the Netley course in the A M D, J Cleghorn, R Harvey, J Bennett, H Cook, J T. Welsh, and A Baime. The list was headed by Kenneth McLeod, afterwards Professor of Surgery in Calcutta, and of Military Medicine in

the Army Medical School at Netley. The second was Cleghorn, who became Director-General in 1895, just thirty years later, and the third was Harvey, who succeeded Cleghorn in that post in 1898. Among the Assistant-Surgeons of the A M D, in the batch which Harvey and Cleghorn had left, was W Taylor, afterwards Director-General.

The rules issued for the examination of 1865 do not differ greatly from those of 1855, ten years earlier, as far as the examination itself is concerned. But they include rules for the Netley course, which was not in existence at the last preceding examination in 1860. The rules are given in full in the Bengal Army List of July 1865. The chief differences from 1855 are as follows —

2(c) "The candidate must possess a diploma in Surgery, or a license to practice it, as well as a degree in medicine, or a license to practice it in Great Britain or Ireland."

(d) "Degrees, diplomas, licenses, and certificates of their registration in accordance with the Medical Act of 1858, must be lodged at the India Office, for examination and registry, at least one fortnight before the candidate appears for examination."

Rules 3 to 6 give the subjects for examination. Those for the competitive examination were three only, anatomy and physiology, surgery, and medicine, including therapeutics and diseases of women and children. Candidates who desired to do so might also take up comparative anatomy, zoology, botany, and physics, but marks gained in these subjects only counted for place among the successful competitors, not for gaining a place among those successful.

8 After passing the preliminary examination, every candidate will be required to attend one entire course of practical instruction at the Army Medical School, before being admitted to his examination for a commission, on

- (1) Hygiene
- (2) Clinical and Military Medicine
- (3) Clinical and Military Surgery
- (4) Pathology of Diseases and Injuries incident to Military Service

These courses are to be of not less than four months' duration.

9 "At their conclusion, the candidate will be required to pass an examination on the subjects taught in the school. The examination will be conducted by the Professors of the school."

"The Director General, or any Medical Officer deputed by him, may be present and take part in the examination. If the candidate gives satisfactory evidence of being qualified for the practical duties of an Army Medical Officer, he will be eligible for a commission as Assistant Surgeon."

10 "During the period of his residence at the Army Medical School, each candidate will receive an allowance of 5s per diem with quarters, or 7s per diem without quarters, to cover all costs of maintenance, and he will be required to provide himself with uniform (viz, the regulation undress uniform of an Assistant Surgeon of the British Service, but without the sword)."

11 "All candidates will be required to conform to such rules of discipline as the Senate may, from time to time, exact."

"The persons who shall be pronounced by the Examiners to be the best qualified in all respects will be appointed to fill the requisite number of appointments as Assistant Surgeon in Her Majesty's Indian Army, and;

so far as the requirements of the service will permit, they will have the choice of the Presidency in India to which they shall be appointed, according to the order of merit in which they stand on the list resulting from the preliminary examination

12 "All Assistant Surgeons, who shall neglect or refuse to proceed to India under the orders of the Secretary of State for India within two months from the date of their appointment will be considered as having forfeited it, unless special circumstances shall justify a departure from this regulation

13 "Myopia, necessitating the use of glasses, is a disqualification for admission to the Indian Medical Service"

Since 1865 little alteration has been made in the regulations for admission. In January 1887 the minimum age for admission to the competitive examination was reduced from twenty-two to twenty-one years. In August 1891 a rule was made that no candidate should compete for admission more than twice, in January 1898 raised to three times. In 1866 a moderate degree of myopia was permitted by the Regulations, provided that the candidate did not require to wear glasses to operate. In 1873 French, German, and Hindustani, were added to the optional extra subjects of examination. In 1880 the pay of the Surgeons on probation at Netley was raised to eight shillings, and in 1903 to fourteen shillings a day.

A Madras G O of 14th August 1821 orders that newly joined Assistant-Surgeons shall undergo a probationary course, on their first arrival, of instruction in the treatment of diseases of India, on the completion of which they were examined by the Medical Board, and, if found fit, reported duly qualified to enter upon the general duties of the army. Another Madras G O of 18th August 1829 lays down that, after finishing the first part of his probationary course, and being reported qualified for the charge of acute cases of the principal diseases of India, the Assistant-Surgeon may be posted to one of His Majesty's regiments for the second part of his course.

In all three Presidencies, for many years, a modification of this system was in force. The newly joined Assistant-Surgeon was posted, on his arrival, to the Presidency, and there underwent a certain amount of instruction in the diseases of India, in the chief hospitals of the city, while waiting until his services were required elsewhere. After the institution of the Netley course, however, no fixed period for his stay was required, and no examination held, he was only detained at the Presidency until required for other duty. This system continued in force until about 1879.

Examinations for promotion were held at a very early date. In Long's *Selections*, No 591, p 282, is quoted an instance of such an examination in 1762.

"Proceedings 11th November 1762—Mr Peter Smith, Surgeon's Mate in the Army, having arrived from Patna, ordered the Secretary to direct Mr Clement Crooke to call to his assistance one or more of the Surgeons of the

Europe ships and examine Mr Smith on his knowledge of his profession. And after such examination they are to report to the Board whether they esteem him properly qualified to be promoted to be a Surgeon to the Army"

Peter Smith was duly examined and passed. He died at Dikka in January 1779. Clement Crooke was born at St Christophers, in the West Indies, and took the degree of M D at Edinburgh in 1853. He came from Chittagong in April 1762, to succeed William Plenderleath, deceased, as Head Surgeon at the Presidency. He formed one of the party under Mr Amyott who were taken prisoners by Mr Kasim, the Nawab of Bengal, near Murshidabad on 31st July 1763, when Amyott himself was killed, and perished in the Patna Massacre in October 1763.

In Madras orders were passed in 1775 that all Assistant-Surgeons should in future be examined before they were promoted to the rank of Surgeon (28), Madras Separate Letter of 14th February 1776 reports in para 5.

"Assistant Surgeon Terence Gahagan allowed to return to Europe. On examination he was judged unqualified to succeed as Surgeon, but he bears a very good character, has been 9 years in your Service constantly employed in Hospitals and is, therefore, recommended to Court's attention should he make himself properly qualified"

Terence Gahagan entered the Madras Medical Service as Hospital Mate on 4th August 1767, and was promoted to Surgeon from 12th June 1778. A letter from Court dated 30th January 1778(29) states that he is returning to India on the *Grosvenor* (30), and is appointed Surgeon at Madras, to rank next below the youngest Surgeon. He became Head Surgeon on 15th February 1788, Member of the Medical Board on 22nd January 1800, retired on 29th February 1812, and died in London on 21st January 1814. His only regular qualification seems to have been the M D of King's College, Aberdeen, which he did not obtain until 1798.

For several years after Gahagan's promotion, a dispute went on between him on the one side, and Surgeons Binny and Mein on the other, as to their respective seniority. Gahagan had been the first to enter the service, but the other two had reached the rank of full Surgeon before him. Contrary to what would have been the decision in modern times, the Court finally decided in favour of Gahagan.

This early promotion examination seems to have gradually been discontinued.

The examination for promotion from Assistant-Surgeon to Surgeon was reintroduced in the new warrant of 1864 for the I M S, para 33(31).

"Asst Surgeons of twelve years' service from the date of first commission (of which two years shall have been passed in charge of a native regiment) who shall have passed the prescribed examination in professional subjects will be promoted to the rank of Surgeon"

The Royal Warrant of 10th May 1873(32), which abolished the rank of Assistant-Surgeon, directs in paragraph 2—

"A Surgeon shall be promoted to Surgeon-Major on completion of twelve years' service from date of first commission, subject to his passing such examination as our Principal Secretary of State for India in Council may require"

This examination was dropped in 1880, under the provisions of the Royal Warrant of 16th November 1880(33), para 4 of which, omitting the order for promotion examination, runs—

"A Surgeon shall be promoted to Surgeon-Major on completion of twelve years' service from date of first commission"

Surgeon Robert Reid, one of the officers who entered the Bengal Medical Service on 1st April 1865, refused to appear for this promotion examination, and remained at the head of the list of Surgeons from 1st April 1877, when his contemporaries were promoted, to 16th November 1880, when the examination was abolished, and he was promoted, with a loss of three and a half years seniority

Since 1880 there has been no examination for promotion to Surgeon-Major or Major. But an examination for promotion from Lieutenant to Captain was introduced by Notification No 1047, dated 23rd October 1903, by the Government of India, Military Department(34), para. 4 of which states—

"Officers after completing eighteen months' service will be required to pass an examination in Military Law and Military Medical Organisation"

Commencement of Service—The medical officers appointed from 1855 to 1860 counted their service from the date of the examination at which they passed. From 1865 to the middle of 1889 their first commissions were dated from the day on which they joined the Army Medical School at Netley. From the middle of 1899 to the middle of 1902 their commissions were dated from the day they passed out of Netley, under the provisions of Indian Army Circulars, clause 115 of June 1890. This change was made in order to assimilate the conditions of service in the I M S to those of the A M D (35). At one time the Surgeons on probation for the Navy, the A M D, and the I M S, all of whom had passed at the same examination, were all under training together at Netley, but ranking from three different dates, the Navy from the date of examination, the I M S from the date of joining Netley, and the A M D from the date of leaving Netley. Finally, Notification No 1047 of 23rd October 1903, quoted above, again dated the newly joined officer's commission from the day on which his course of instruction in England began, beginning with those who joined on 1st September 1902

The Army Medical School(36)—Both the Army Medical School and the Royal Victoria Hospital at Netley owe their foundation to the Crimean war. In 1857 a Royal Commission was appointed to enquire into "the regulations affecting the sanitary condition of the army, the reorganisation of military hospitals" and the treatment of

the sick and wounded. Of this Commission the Right Honourable Sydney Herbert, afterwards Lord Herbert of Lea, was President, Sir James Ramsall Martin was one of the members. Lord Herbert was, in fact, the founder of the school, and in his memory was founded the Herbert prize, awarded each session to the candidate who got the highest marks in the examination held at the end of the term. The Commission reported to Parliament early in 1858. Among their proposals was one to the effect "that, after the first or Entrance examination, candidates for commissions should be sent to a military general hospital, there to go through a course of instruction in military hygiene and in clinical military medicine and surgery, for which purpose the necessary professional chairs, in lieu of the two now existing in Edinburgh and Dublin, should be instituted at the principal general hospital in England"

The Royal Victoria Hospital, Netley, was erected by the special desire of Her Majesty Queen Victoria, both she and the Prince Consort taking a personal interest in the plans. The foundation-stone was laid by the Queen on 19th May 1856, and in 1863 the building was completed and opened for the reception of soldiers invalided from India and the Colonies.

The Army Medical School was first established at Fort Pitt, Chatham. Its Senate was appointed on 31st March 1860, and consisted of the following seven officers—

Insp. Genl.	Gibson, O B	Director General, A M D
"	J R Martin	Physician to the Secretary of State for India
"	J R Taylor O B	I G, A M D, at Chatham
"	F Longmore	Professor of Military Surgery
Surg. Major	C Morehead	Professor of Military Medicine
"	E A Parkes	Professor of Military Hygiene
Dr	W Aitken	Professor of Pathology

Of the four professors, two were retired officers of the A M D, one, Dr Morehead, belonged to the I M S, and the fourth, Dr Aitken, had served as Pathologist to the Army in the Crimea.

The Army Medical School remained at Chatham for five sessions, or two and a half years. In the meantime one change had taken place in the staff, Surgeon-Major Morehead having resigned in March 1861. He was succeeded by Surgeon-Major (Hon. Surgeon-General) W C Maclean, who remained in office for a quarter of a century, until 1886. On the completion of the Victoria Hospital the school was moved to Netley, where its first session began on 1st April 1863. For the first two years, the selected candidates for the A M D only attended the school, admission to the I M S being temporarily suspended. In 1871 the officers selected for the Medical Department of the Navy were also posted to Netley for instruction, an additional professor being appointed to teach Naval hygiene. On the opening of the Naval Medical School at Haslar Hospital, Gosport, in 1880, the naval men ceased to attend Netley.

In 1901 it was decided to reorganize the school, a new Army Medical School and Staff College being erected at Millbank, on the site of the old penitentiary. This school was opened on 1st September 1902, the last batch of selected candidates for the R A M C leaving Netley on 29th June 1902. After this date the probationers for both R A M C and I M S were sent to the new school for two months, after which the Lieutenants of the R A M C went on to Aldershot, those of the I M S going to Netley, for two months instruction in military medicine and surgery. This system went on for nearly three years. The Netley School was finally closed on 31st May 1905. Since then all Lieutenants on probation for both Services have attended the school at Millbank, and afterwards gone through a course at Aldershot.

Until the Netley School was closed, one of the Professorships, that of Military Medicine, was always held by a retired officer of the I M S, the Indian Government paying part of the cost of the school. As that Government pays no part of the cost of the Millbank School, it no longer appoints one of the professors.

The Professorship of Military Medicine, at Fort Pitt and Netley, during the forty-five years that the school existed, from 1860 to 1905, was held by the following officers —

Surgeon Major O Morehead (Bombay), March 1860 to March 1861
 Surgeon Genl W C Maclean (Madras), March 1861 to 1886
 Surgeon Major D B Smith (Bengal), 1886 to June 1889
 Brigade Surgeon H Criley (Bengal), June 1889 to July 1897
 Colonel Kenneth McLeod (Bengal), August 1897 to July 1905

During its life of forty-five years, 3,218 surgeons on probation went through the Army school at Fort Pitt and Netley, 1,687 for the A M D, 1,318 for the I M S, and 213 for the Navy, the two latter, of course, at Netley only.

The present system of instruction, at the Millbank school and at Aldershot, appears to have been found suited to the needs of the R A M C. But whether it is adapted to those of the I M S is, to say the least of it, doubtful. For a corps which serves in India only, it would seem that India is the proper place for instruction in tropical diseases. In the large hospitals of the Presidency towns may be found an inexhaustible supply of material for clinical study and research. These hospitals are now well equipped with modern appliances for bacteriological work. As almost all new arrivals in India land at Bombay, that city would probably be the most convenient in India as the site of a great tropical post-graduate school of medicine. Were such a school established, that would be the best place for training the Lieutenants on probation for the I M S, after they had gone through a short military course at Aldershot.

Since the Crown took over the Government of India in 1858, all appointments to the I M S have been made by competitive examination, with the exception of some six plague officers who

were given direct commissions in India in 1902-03, and four men who have exchanged from the R A M C.

It may be of interest to give below a table of the marks gained by the successful competitors for the A M D and the I M S, respectively, during a period of somewhat over twenty years, when candidates for the two Services underwent the same competitive examination. For the greater part of this period, from 1880 to 1898, the candidates for the A M D and for the I M S, though appearing for the same examination, had to declare beforehand which service they wished to enter, and were not competing against each other. From 1898 to 1901 the examination for the two Services was identical, and those who entered for it, provided they were by birth eligible for the A M D, were given the choice of which Service they would select, according to their position on the list of successful candidates.

In the later seventies of last century competition for the A M D had ceased to exist. That service was very short-handed, and few applicants were forthcoming to fill many vacancies, consequently all who could pass a qualifying examination received commissions in the department. With the issue of the Royal Warrant of 27th November 1879, this state of affairs instantly changed, and after an examination held on 8th December 1879 sixty-five commissions were given, the marks gained by those at the top of the list being very high. Surgeon-General Sir Alfred Keogh, K.C.B., afterwards Director-General, passed second on this occasion. For several examinations the marks required to be successful for the A M D were higher than those required for the I M S (37).

As a rule, the number of vacancies for the A M D was larger than for the I M S, and it naturally follows that many men succeeded in gaining commissions in the former service, who would have failed for the latter.

For two years, August 1887 to February 1889 inclusive, no competitive examination for the A M D was held. This leaves thirty-nine simultaneous examinations, in five of which the first man for the A M D scored higher marks than the first for the I M S, which took the lead on the other thirty-four occasions. And, in these thirty-nine examinations, eight men in all got into the I M S, who would have failed for the A M D, on the other hand, out of 842 men admitted to the A M D, only 403, or less than one-half, would have succeeded, on the marks earned, in entering the I M S. And on one occasion the first man for the A M D actually scored fewer marks than the last successful competitor for the I M S.

The second large batch admitted to the A M D, after the examination in February 1885, when war with Russia seemed imminent, after the Penjdeh affair, and the men admitted by nomination, between 1890 and 1901, are not included in these tables.

THE R A M C AND THE I M S

A comparison between the marks gained at the Entrance Examinations for the two services for twenty years

R A M C					I M S					
Date of Examination	No. of Vacancies	Highest marks	Lowest marks	Would have passed for I M S	No. of Vacancies	Highest marks	Lowest marks	Would have failed for R A M C	REMARKS	
December, 1879	65	2 590	1 365							
February, 1880	35	1 925	1 135	2	23	2 470	1 755		R A M C got highest marks	
August, 1880	69	2 510	1 250	52	26	2 385	1 460			
February 1881	40	2 320	1 315	40	22	2 395	1 265	1		
August, 1881	25	2 390	1 805	25	10	2 702	1 795	1		
February 1882	15	2 295	1 940	15	8	2 495	1 900	1		
August 1882	15	2 365	1 870	3	8	2 960	2 185		R A M C got highest marks	
February, 1883	15	2 630	2 050	8	5	2 555	2 225			
August, 1883	20	2 410	1 755	13	5	2 475	2 015			
February, 1884	20	2 440	1 920	15	5	2 564	2 040			
August, 1884	30	2 475	1 960	2	5	2 625	2 378			
February 1885	45	2 540	1 800	20	5	2 590	2 160		Marks raised 900	
August, 1885	40	2 980	2 070	6	8	3 208	2 760			
February, 1886	60	3 045	1 940	10	16	3 265	2 710			
August, 1886	41	3 180	2 090	29	25	3 165	2 315		R A M C got highest marks	
February, 1887	25	3 390	2 630	19	28	3 435	2 720			
August, 1887	No Entrance Examination				23	3 360	2 750			
February, 1888					14	3 410	3 070			
August, 1888					4	3 470	3 060			
February, 1889	No Entrance Examination				10	3 550	3 170			
August, 1889					12	3 400	3 050			
February 1890					17	3 205	2 930			
August, 1890	20	3 245	2 825	4	12	3 450	3 140			
February 1891	20	3 135	2 670	2	21	3 625	2 975			
August, 1891	20	3 300	2 550	2	6	3 660	3 105			
February 1892	25	3 160	2 665	5	17	3 425	3 060			
August, 1892	10	2 815	2 235	10	17	2 850	2 155	4		
February, 1893	14	2 565	1 990	3	15	3 150	2 505			
August, 1893	12	2 421	1 978	5	12	2 777	2 065			
February 1894	10	2 849	2 178	9	14	3 120	2 192			
August 1894	12	2 415	1 940	8	14	2 727	2 000			
February 1895	12	2 580	1 611	8	18	3 104	1 959			
August, 1895	8	2 685	2 001	5	16	2 605	2 212		R A M C got highest marks	
February 1896	9	2 740	2 000	5	17	3 186	2 223			
August, 1896	13	3 018	1 804	11	12	3 005	2 366		R A M C got highest marks	
February 1897	14	2 272	1 800	Nil	7	2 823	2 506			
August, 1897	19	2 923	1 800	15	18	3 124	2 500			
February 1898	21	2 775	1 943	1	15	3 470	2 721			
August, 1898	16	2 638	1 848	15	20	3 179	2 027			
February, 1899	24	2 493	1 846	17	18	3 457	2 295			
August, 1899	14	2 875	1 900	3	22	3 151	1 939			
February 1900	17	2 554	1 800	11	18	3 640	2 262			
August, 1900	9	2 779	1 855	2	14	3 476	2 385			
February, 1901	7	2 750	1 905	7	28	3 449	1 895	1		

REFERENCES

(28) M P L, 1775 No 1309 of 14th October 1775, Military Cons., Vol LIII, pp 1381 1385

(29) M P L 1778 No 161 of 30th January 1778, Pub Desp from Court Vol LXXXI pp 89 104

(30) The *Grosvenor* is still remembered on account of the tragic circumstances of her loss on 4th August 1782, on the coast between Natal and Delagoa Bay. Her crew and passengers numbered about 142, under Captain Coxon. Most of them got safely ashore including three ladies and five children but only a few, five men and a boy, survived to reach the Dutch settlement at the Cape. See *Bengal Past and Present*, Vol II, p 324

(31) See Chapter—

The Crown succeeds the Company

(32) See Chapter— 1865 to 1896

(33) See Chapter— 1865 to 1896

(34) See Chapter— The New Service

(35) See Chapter— 1865 to 1896

(36) Much of the information about the Army Medical School is taken from an article entitled "Nefley," in the *Caledonian Journal* of October 1906, by Col K. McLeod, I.M.S. retired.

(37) It may be noted, however, that while in the two examinations held in 1881, the last man for the I.M.S. got in with lower marks than the last man in the A.M.D. on each occasion the last but one for the I.M.S. would have stood a good way up the A.M.D. list. In February 1881 there was a difference of nearly 250 marks between the last but one (1,510) and the last (1,265) man in the I.M.S.

HYPNOTISM AND PSYCHOTHERAPY *

BY V R GREEN ARMYTAGE, M B,

CAPT, I M S,

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IN the first quarterly number of the *Bengal Past and Present*, for 1910, a very entertaining article by Col D G Crawford, I M S, appeared on James Esdaile, who, as a member of the I M S in 1845, was the pioneer in the use of hypnotism as an aid to surgery and medicine in the East, it may be then of some value if I can revive an interest in the application of this form of treatment by recording the methods and results of treating some 200 cases, in this country and at home, by means of hypnosis, for I feel assured that if I can stimulate sufficient interest for the profession to make observations for themselves, I shall have served a good purpose convinced as I am, that if they are successful in obtaining satisfactory results, they will appreciate that they have an additional and powerful weapon with which to cure or relieve their patients

I am not desirous of here dealing with the history, theory, and various phenomena of hypnotism, nor do I desire to bring anathema on the subject by offering with many of the modernist clergy that some of the miracles of the New Testament (the laying on of hands, for instance), can be thus explained. But I am desirous of first dispelling the ever recurring erroneous ideas on the subject—

(1) It is impossible to hypnotise a person against his will, despite the enthralling statements of novelists

(2) Strong willed persons are far more easily influenced than the weak willed, for the simple reason that they can control and bring themselves *en rapport* with the hypnotist

(3) 85—90 per cent of all people are capable of being hypnotised

(4) There is no danger of the operator holding a malignant power over the patient

(5) There is no difficulty in dehypnotising, that is, bringing the patient out of the hypnotic state

(6) A hypnotist has no uncanny magnetic power. Any medical man could and can do it

The above being now well accepted and proven, perhaps, it will make matters clearer if I briefly in the time at my disposal attempt to define and explain this condition

Hypnosis has been defined as a state of induced sleep in which the objective mind of the person is wholly or partially, in abeyance, thus bringing to the fore, more or less the subjective mind, which is acted upon by suggestion

But what you will ask is meant by objective and subjective mind, or as some call them the conscious

and subconscious mind. I reply that the objective mind is that which we consciously use in the waking state and which takes cognisance of things around us, in fact, its media of observation are the five senses, whereas the subjective mind is in constant, though unconscious use, whether we are asleep or awake. It is independent of the senses, it is the seat of the emotions the store house of memory. It indeed performs its highest functions when the objective mind is in abeyance, that is, during hypnotic sleep. You may ask what proof there is of this. I answer in Socratic fashion by asking you what absolute proof have we of the truth of Newton's theory of gravitation, of the atomic theory or indeed of any scientific theory. None except that it corresponds with the results and every known fact. So with hypnosis the evidence and results abundantly prove the theory of man being possessed of two minds. To give a simple example, all of you have heard of ladies using blasphemous language under light anæsthesia. This she has never used consciously, though perhaps the subconscious mind years before may have absorbed such and stored it up. Or again, I could tell you innumerable experiments where a patient under hypnosis has given answers and details as to circumstances and places of which in her waking state she was absolutely ignorant. Or I might tell you of a drunken porter who always lost his parcels and could in no wise discover them until he was drunk again, when his subconscious self guided him to the correct locality.

I will now briefly describe to you one of the methods of inducing hypnotic sleep. But before detailing this to you there are a few fundamental conditions which must be obtained whatever method is adopted

Firstly—The hypnotist must have confidence in himself and be able to inspire his patients with the same. He must have also tact, patience and initiative and sound knowledge of medicine

Secondly—The surroundings must be suitable, a comfortable chair should be provided, the back should be to the light and the room quiet

Thirdly—The patient must be willing, any misgivings should have been allayed and his mind as far as possible be at rest

Fourthly—A trustworthy witness should always be present both for the patient's and doctor's sake

These details being grasped, I will describe the method which I most frequently use, though it must be remembered that if one method fail, the use of another may be entirely successful. Some of these I will detail later

Having placed my patient in a long chair or sofa with his back to the light I sit down and just quietly and convincingly talk to him. If he is educated I explain to him what I am going

* A paper read before the Asiatic Society, Bengal, on November 8th

to do and why I am doing it. If he is not, I tell him quietly and firmly that what I am going to do will greatly benefit him, that I am going to put him to sleep and that when he wakes he will feel much better. I then stand by the patient's side facing him, place my left hand on his forehead and ask him to look fixedly at the tips of the two extended fingers of my right hand, which are held some 8 inches from, and 4 inches above, the level of his eyes. While he keeps on looking, in thirty seconds or so, it will be seen that the lids flicker. Then I suggest in a monotone "You are growing drowsy" "You can no longer see my fingers clearly" "Your eyes are closing" "You can no longer keep them open" "Close your eyes" "Sleep"

In nearly all cases they obey and close. I then gently massage the eyeballs in a rotatory manner with a light pressure and bid him "sleep deeper" and "breathe deeper," at the same time with hand on chest I say "You cannot open your eyes" "You are now asleep" "You are quite at ease" "Go on sleeping deeper." The patient is now in the light stage. I wait a few minutes and then begin the suggestions which are suitable for his relief. If it be insomnia I bid him go on sleeping. I tell him the power to sleep has returned, that if he awakes he will remember what I have said and will go at once to sleep again and wake up fresh and better in the morning.

If it be for functional ache or pain I place my hand on the peccant part and suggest first a sensation of warmth and then firmly give the suggestions that the pain is growing less, that it is now gone, that it will not return, that it does not exist. Such procedure is admirably suited for the functional aches or pains met in gynecology.

If still deeper hypnosis is necessary, such as for minor operations the procedure is somewhat different, for now to gain anaesthesia deep hypnosis is necessary. Esdaile whose operative work with hypnotism was done under the fierce light of a Government Official Commission was in the habit of hypnotising his patients five or six times on consecutive days, in order to get them fully *en rapport* and each time more deeply under influence. In Burmah, working with Madriassis, I found this also very necessary, though in rare cases, once or twice may be sufficient only. To produce anaesthesia after the ordinary procedure, I make passes over arms, body and limbs, suggesting first that they are becoming stiff and rigid and then that the power of sensation is disappearing, that they cannot feel anything, that they cannot feel pin prick or knife, that the part is dead. If now on testing with a pin they are deeply anaesthetic, the operation may be done. For example, I have painted chancres with pure nitric acid, removed buboes, and opened whitlows and stopped toothache.

The question will now be asked, is this treatment applicable, if one is not a master of the language when one is dealing with Indian patients. The answer is in the affirmative. When in military employ in Burmah I was fortunate in being associated with two excellent Sub-Assistant Surgeons, namely, Ilia Singh and Ramuni, whose interest and intelligence were at my disposal. Having first demonstrated the method on a European I proceeded next to hypnotise Punjabi or Madras, the method being that having first fixed the eyes and mind of my patient I said in English a sentence which was repeated into the respective language, in exactly the same tone by my assistants. The results were very satisfactory. For example a sepoy came to the hospital complaining of 6 days' obstinate constipation. His abdomen was very distended and boggly. He was hypnotised according to the above method and a suggestion given that within 2 hours of entering hospital he would have a very copious motion. The result was astounding in quantity and accuracy. He had no drugs whatever.

So far my endeavour has been to put the subject before you in as practical a shape as possible. Therefore, before we consider the uses and abuses of this form of treatment let me give you a few hints which may help and, perhaps, make all the difference between success and failure in practice—

(1) If the patient fails to close his eyes, bring your fingers slowly towards them and then command or tell him to close them.

(2) If you fail with one method try another without hesitation and with confidence. Failure in 80 per cent cases is due either to yourself which is correctable, or to the patient who is excited or has misgivings.

(3) Do not be put out if your patient says he has not been affected whatever. Encourage him by telling him that results are often obtained without any actual feeling of sleep. A simple experiment as follows may convince him. Ask him to sit in a chair facing you, and tell him to look fixedly at you, at the same time you make a few downward passes over his arms, suggesting that they are growing heavy. Lift his arms by the wrist and tell him they feel like lead and then let them fall, again repeat the action and suggestion after a minute or so, desist and you find that he will tell you that he did experience a feeling of weight in his arms. After this, again proceed with your hypnotism as before.

(4) Suggestions should, whenever possible, be given in the negative, for the inhibitory is more powerful than the imperative suggestion, e.g., "You cannot" is far more successful than "You must." The suggestion "You cannot open your eyes," for example, is usually the first obvious sign of early-hypnosis.

(5) Suggestions must be made in a clear tone and simple language and all technicalities avoided.

The tone should be commanding or persuasive but always monotone

(6) Do not attempt to hypnotise during a spasm of pain or the highly neurotic

(7) Be mindful always to suggest that the patient will feel fresh and bright on awaking. To dehypnotise all that is necessary is to say 'awake' or one can say 'You will awake in five minutes' time'

(8) It may be of advantage or necessary to have two or more sances on the same day in order to more rapidly get the patient *en rapport*

There are two other usual methods of producing hypnosis, which I must describe. In the one, the patient gazes at a bright object such as a two-anna piece held before him, while suggestions are made as before, whereas in the other method of fascination the hypnotist uses his eyes to produce the effect by just bending over the patient and making him gaze up at him while he suggests as before. The former of these two methods I have often had recourse to. It is not my intention to here refer to the stage-methods of figures and discs and revolving mirrors, etc., as, I feel most strongly that these exhibitions should be prohibited. Hypnotism should only be practised by qualified medical men for therapeutic purposes and not by charlatans on the stage and behind curtains for the purpose of amusement and money.

We come now to the consideration of the subject in relation to its uses in medicine. But before doing so I should like to say that we have unwittingly a very large body of adherents who call themselves Christian Scientists. They produce their results by auto-suggestion which is manifested by the power of waking or playing suggestion in themselves somewhat akin to the ancient maxim that the Gods help them who help themselves.

If I were asked what cases were most susceptible I should answer children and alcoholics, and if what diseases I should say functional neuroses, with no morbid or attributable cause. Children are readily hypnotisable, and in Paris where I had the privilege of working with Dr. Beillon, it was remarkable the number of '*Mechants enfants*' that were brought to the clinic. Cases of nail-biting, masturbation, stammering, lying and so on being particularly frequent. I have had myself in this country two cases of nail-biting and masturbation, which were rapidly cured after two and three sances respectively.

On looking up my case book I find that over 50 per cent of the cases I have treated were for insomnia. Here we have a condition admirably suited for hypnosis. For we all know, how frequently this condition is met with, especially in this country where the layman is apt to be his own doctor and where we have all read of cases of disaster following persistent

insomnia and drug taking. But the question will at once arise, is the effect permanent or how can one assist its permanence? In the large majority of cases it is so. It will be necessary to hypnotise your patient two or perhaps three days running and after that you will give him a post-hypnotic suggestion. The procedure would be as follows. Having put your patient to sleep you will suggest to him that should he awake that night he will at once remember what you have done, that he will think of it and will at once fall asleep again till morning. This secondary suggestion is of great importance. The next two days it will be again perhaps necessary, but after that you either give a verbal suggestion to the effect that to-morrow and onwards he will at once sleep on going to bed or you will give him some symbol. Personally I am in the habit of giving my visiting card on the back of which five cross lines have been made in the middle, and the letters S L E E P written between them. Then you tell him while he is under hypnotic influence that at any time in order to sleep, all that is necessary will be for him to hold the card above his eyes when he is in bed and repeat the words thinking of what was previously done. That he will no longer have any difficulties but that if he should, the card will at once remind him and put him to sleep.

It would be of no purpose to give you a complete list of conditions that are amenable, but the following—I have had experience of outside those cases which I have classed as functional aches and pains—sea sickness, constipation, insomnia, spermatorrhoea, drug habit, masturbation, stammering, nail-biting and hysterical paralysis.

Drug habit, particularly alcoholism, is peculiarly difficult to treat in this country, as the club life greatly militates against suggestion. In one very severe case I was able to induce total abstinence for three months and then he relapsed and was sent to Dr. Lloyd Tuckey, who had success for five months, but the patient relapsed on his return to duties in this country. I have already above referred to some of the erroneous ideas which are still held by the ignorant amongst doctors and laymen. I would therefore, here like to briefly speak of some of the objections which are still made by the more enlightened. It is commonly said that hypnotism interferes with the free will of the patient or that the will should not be tampered with. But I ask you does not all education and moral training interfere with free will? Will not a school teacher by tact and patience produce a complete moral revolution? If a child steals or lies or masturbates, will you not interfere by the moral suggestion of the school room to guide into better channels this free will of his that is

ruining him? Does not the success of Weir Mitchell treatment to a large extent depend upon the healthy moral massage used by an intelligent nurse? No, Hypnotism does not weaken the will, it strengthens it, so that by auto-suggestion the patient's own will power may conquer.

Another objection is that hypnosis in therapeutics is now superannuated, but I would ask, which of you has not pulled a patient through a disease by faith or suggestion, it matters not which word we use. I do not hold this treatment up as a panacea for all ills, it has its limitations, it has its relapses, but I do maintain that it is worthy of trial in suitable cases, where all other treatment has failed. A very large number of my own cases had had all variety of advice and suffered much at the hand of the physician. No, Psychotherapy must ever remain an item in medicine so long as the personal equation of the patient in disease is not lost sight of. Nowadays, an even more extended use of psychotherapy has come to the fore. I refer to the method of psychoanalysis so ably elaborated by Professor Freud of Vienna by which he proves that the true focus of psychic maladies consists in a painful idea or a group of ideas which have been voluntarily driven back at some time in life into the sub-consciousness of the patient and have there given rise to 'trauma'. The psychoanalyst seeks to discover what this painful impression is, so that he may give it outlet. This therapeutic discovery of Freud is of immense importance, and I think only serves to prove that psychotherapy is in its infancy. Psychoanalysts to the alienist should be as the stethoscope to the physician.

Unhappily, instances are not wanting of the abuse of hypnotism, but I would reiterate that if the rules of Bernheim were adhered to, none such could occur—

- (1) To have always a suitable witness present
- (2) Never to hypnotise without getting permission to do so
- (3) Only to suggest during hypnosis for therapeutic purposes

Gentlemen, thus briefly I have put this subject before you for discussion, and if I have ignited a spark of enthusiasm for so engrossing a subject my purpose will have been served. For I feel now that you would not be overwhelmed by that bitter outcry of Macbeth—

"Canst thou not minister to a mind diseased
 'Pluck from the memory a rooted sorrow
 'Raze out the written troubles of the brain
 'And with some sweet oblivious antidote
 'Cleanse the stuffed bosom of that perilous stuff
 'That weighs upon the heart'

AIR MOVEMENT IN ASSOCIATION WARDS

By COL W G KING, CIE, IMS (ret)

WHEN a local body allots a sum of money for building a hospital, it considers it earns

great "merit"—in the Buddhist meaning of that term—for it believes, notwithstanding clear directions in the act it administers as to part of its finance being collected for medical relief, it performs a deed of pure charity. If it depletes the exchequer for academic education of sickly masses and incidentally starves sanitary works, it comforts its conscience that it has performed its duty to the taxpayers. Hence, in practice, the necessity for cheapness is much more insistent when it is proposed to erect a hospital or a medical laboratory than in the case of additions to the ever-increasing number of schools and colleges. In discussing plans for new hospitals, economy is usually sought by cutting down the floor area allotted per head to a minimum, ignoring the demands of drainage and water-supply, lighting and laundries, and limiting the number and nature of the accessory rooms upon which depend so greatly successful surgery, nursing and comfort of the sick. Large windows and doors, which are essential in the tropics, incur special declamation as expensive items—a 4ft x 3ft window being held to be as suitable for a ward as for a godown.

To the average lay official some slight increase over the space available in a native hut is held to be a reasonable standard minimum, whilst the regulation area allowed sepoy and prisoners in hospitals is regarded as a handsome maximum. The economical official frequently appeals to the fact that the latter was fixed after due consideration by recognised sanitary authorities, and therefore must be sufficient in treatment of the class who resort to public hospitals but is apt to ignore the additional item that this was suggested with the knowledge that in affording accommodation for a reasonable maximum of sick amongst a body of a strength subject to but little variation, it can only be at exceptional times that this is fully occupied. Consequently, it is rarely that both the prisoner and the sepoy do not, in practice, have available a very much greater space than indicated by the standard of 60 sq ft and 800 c ft. The same reasoning is applicable *ceteris paribus* to poor-law infirmaries in Great Britain.

I have also found myself confronted with the assertion that in the tropics wards are so fully open to fresh air that it is absurd to look to European standard as affording evidence of any value, and that currents of fresh air are ever traversing the wards—as witness the fact (as urged in its published Proceedings in this connection by an important Sanitary Board) that whilst in Great Britain no man desires paper weights to keep together his office papers, in India, they are most desirable adjuncts. It is of little utility to suggest to such an advocate of economy that whilst it is true this may be the state of affairs at certain times of the day

and seasons, and in certain parts of the country, it is also true there frequently is a condition of air stagnation—especially at night—of so complete a nature that no current sufficient to stir a leaf of a tree may be perceptible. Hence, as “the proof of the pudding is the eating of it,” I have thought it might be useful to those dealing with the “sanitary consciences” of local bodies to have at disposal the following results of utilizing spaces under tropical conditions. The experiments were conducted under my orders, by Mr Eggayasawmy, Overseer, P W D, who was attached to my office in Burma as Construction Assistant. Haldane's Carbonic Acid estimating apparatus, as made by Mr C E Muller & Co, High Holborn, London, was employed.

THAYETMYO JAIL

No 7 Ward—Total accommodation for 135 prisoners at 355 sq ft and 479 c ft per head. On night of examination, 125 prisoners were accommodated at 383 sq ft, and 518 2 c ft, per head.

Description of building—Plank building with wooden palisade walls. Verandah 8ft wide and enclosed by a wooden palisade runs the full length of the ward. Main room has ventilating ridge for the full length. Prisoners sleep in three rows.

Examination—Two tests at floor level, giving 10 vols. Carbonic Acid per 10,000 of air.

(2) No 8 Ward—Total accommodation for 91 prisoners at 483 sq ft and 531 c ft per head. On night of examination 111 prisoners were accommodated at 396 sq ft and 435 6 c ft.

Description of building—Side and verandah walls are of “pucca” masonry. The whole length of the ward (on both sides) is built of arches filled by open iron grating from the ceiling to floor level.

Examination—Two tests at floor level giving 6 vols per 10,000 of air.

(3) Female Ward—Total accommodation for 26 females at 355 sq ft, and 498 c ft on night of examination. 5 persons were accommodated at 185 sq ft and 2,690 c ft per head.

Description of building—A “pucca” building with seven iron-grated doors each 3ft x 6½ft on either side of the ward. There is a verandah 18ft wide protected by wooden palisading. The roof of the verandah joins the ward at 6½ft above floor level. There are a high compound wall and buildings which obstruct air motion.

Examination—Two tests three feet above floor level were made and the correct working of the instrument was verified by a test of external air. The air of the ward yielded 16 vols of Carbonic Acid per 10,000 vols of air.

THAYETMYO CIVIL HOSPITAL

(4) First floor General Diseases (male) Ward—Total accommodation for ten patients at 973 sq ft, and 1362 c ft per head. On night of examination, total number accommodated was ten.

Description of building—Wood throughout. On each of the sides, there are three doors 4ft x 7ft and two windows 3ft x 4ft each, all opposite to each other. There is an open verandah 8ft wide for the full length. Adjoining the ward, one end is a bath room 8ft square. There is a row of beds on each side of the ward. One door and one window has been shut by the inmates on the night of the examination. Two lamps were burning.

Examination—Two tests were made three feet above floor level, giving 7 vols of Carbonic Acid per 10,000 of air.

CIVIL HOSPITAL, HENZADA

(5) First floor Female Ward—Accommodation is provided for four patients at 6975 sq ft and 1,342 c ft per head. The number of persons accommodated on the night of the examination was six adults and three children at 372 sq ft and 716 c ft per head.

Description of building—Wood throughout. One door 4ft x 8ft on the long side and one window 3ft x 6ft on the short side. The bottom of the window up to 3ft is provided with venetians. There is an open verandah on 3 sides, the roof of which joins the wall of the ward at 8ft above floor level. Above 14½ft the walls have a ventilating continuous space throughout guarded by wire netting. One shutter of a window was closed. A lamp was burning.

Examination—Two tests were made at two feet above floor level, giving 8 vols of Carbonic Acid per 10,000 vols of air. The accuracy of the instrument was tested by external air.

CIVIL HOSPITAL, PROME

(6) No 1 Ward—Accommodation provided for 12 patients at 71 sq ft, and 1,046 c ft, per head. On the night of the examination, there were 14 patients at 6075 sq ft and 896 5 c ft, per head.

Description of building—Wood throughout. This ward has six doors on each of the long sides each measuring 3½ft x 7ft. The beds (9 of which are reserved for surgical cases) are arranged one row on each side. There is an 8ft verandah on both sides. The junction of the verandah with the main wall is 8ft above floor level. One door and two half doors were shut. Two lamps were burning. There are ventilators over each door 2ft high, placed 12ft above floor level, protected by tiella work and one inch wire netting.

Examination—Two tests were made at 2½ft above floor level giving 9 vols of Carbonic Acid per 10,000 vols of air. Accuracy of instrument was controlled by external air test.

CIVIL HOSPITAL, MYAUNGMYA

(7) Male Ward for general diseases—Accommodation provided for 20 patients at 605 sq ft and 940 c ft, per head. On the night of examination there were 20 patients.

Examination—Two tests were made at 22ft above floor level giving 8 vols of Carbonic Acid per 10,000 of air. The accuracy of the instrument was tested by external air.

CIVIL HOSPITAL, HENZADA

(8) Male Ward first floor—The accommodation is for 24 patients at 62 sq ft, and 1062 3 c ft per head. The number accommodated on the night of the examination was 19 allowing 79 sq ft and 1316 c ft per head.

Description of building—Wood throughout. There are 4 doors (two on each side). The lower 3ft of the windows has venetians. Only one half of the windows is open but the upper portion of the wall for 5½ feet is open throughout the ward and is provided with wire netting for one half of the space and above this a continuous row of glass horizontally hinged ventilators. All are open. There is a verandah to the front and rear 9ft wide. The verandah roof joins the ward wall at 8ft above floor level. The verandah is partly enclosed by “chicks”. One light is burning.

Examination—Two tests were made at 2ft above floor level, giving 9 vols of Carbonic Acid per 10,000 vols of air. Accuracy of instrument was controlled by external air test.

CIVIL HOSPITAL, BASSEIN

(9) Male Surgical Ward, first floor—Accommodation provided for 10 patients at 674 sq ft and 1,027 9 c ft, per head. On the night of examination, there were 16 persons in the ward, giving 4212 sq ft, and 6425 c ft, per head.

Description of building—Wood throughout. Open verandah on north and south side. The junction of the roof of the former with the ward wall is 10ft above floor level and the latter 6ft above floor level. In the south verandah the railings are boarded up to 3ft above floor level. A description of doors and windows which depends on a sketch has been mislaid. Two lamps were burning.

Examination—Two tests were made, giving 16 vols Carbonic Acid per 10,000 of air. The accurate working of this instrument was controlled by the test of external air.

CIVIL HOSPITAL, PYAPON

(10) *General Male Ward, first floor*—Accommodation provided for 12 persons at 60.5 sq ft, with 1149 c ft per head. There were twelve occupants on the night of examination.

Description of building—Open verandah on East and West side. The roof of this joins the ward walls at 8ft above floor level. An open space of one foot is provided throughout the ward at a height of 14½ft above floor level. One lamp burning. Air motion obstructed by houses within 20ft of building and by trees.

Examination—Two tests were made at 2½ft above floor level, giving 10 vols of Carbonic Acid per 10,000 of air. Accuracy of instrument was controlled by external air test.

The first impulse of the reader would be to conclude that the whole data are absolutely inaccurate, seeing that there is little relation between space available and the grade of air impurity as exhibited by the amount of Carbonic Acid present, as shewn below—

Example	Per head sq ft	c ft	10,000 Vols C O
No 1	33 3	518 2	10
2	39 6	435 6	6
3	185 0	2,590 0	16
4	97 3	1,362 0	7
5	37 2	716 0	8
6	60 75	896 5	9
7	60 5	910 0	8
8	79 0	1,316 0	9
9	42 12	642 5	16
10	66 5	1,119 0	10

As to accuracy, I would say that Mr Eggaya-sawmy was most careful in his work and understood fully the use of the instrument employed, and that in the most paradoxical case, namely, No 3, where the square space per head was 185ft², the result was verified by chemical analysis, on another occasion under similar conditions, by a competent I M S officer and approximately the same result was secured. In the other instances, the fact that each test was made twice, and that the correct working of the instrument at the time was verified by comparing results with Carbonic Acid in the external air, should suffice to prove that accuracy was secured. Experiments were made between 8 and 10 P.M., and errors as to all means of ventilation not being employed, were noted but not altered, as it seemed to me, within limits, such lapses should be recognised as possible in practice.

From the conditions under which the tests were made, therefore, it will be seen that nothing can really be learnt from them as to the sufficiency of initial space, as this is overshadowed by other influences, but that it is clear that, far from

it being possible to rely in the tropics upon rapidly moving air as illustrated by the necessity for paper weights, there has to be met the obvious problem of air stagnation and the absence of currents induced by the difference between external and internal air temperatures, which must always play a conspicuous part in ventilation in temperate climates. Thus, for example, results of tests No 1 and 2 are apparently incompatible. No 1 had a small advantage in cubic space, yet No 2 gave the better result, notwithstanding the ridge ventilation in the former case. The explanation lies in the attendant conditions. Although nominally No 1 has plenty of interspace between the palisading, any air current must be broken up and reduced in velocity in passing it, and moreover this palisading is doubled, so that it really acts, in aero-nautical language, as a "wind screen," whereas, in the case of No 2, the ward wall is simply a series of arches, on opposite sides, filled by thin iron bars extending from the floor level to the arch close to the ceiling level. In the case of No 3, whilst the grated doors do not extend to roof from floor level as in No 2 and there are long blank wall intervals, there is beyond them a palisaded verandah forming also a wind screen, also the verandah itself, owing to its junction with the wall at so low a level as 6½ft, forms an angle offering further obstruction—an effect accentuated by a high compound wall and buildings in close proximity. *Notwithstanding the large area and cubic space at disposal*, the stagnant air bore organic odours that were intolerable.

It would be wearisome to the reader to enter into further details. But I think, if results be criticised in each case in this spirit, it will be seen that, during periods of external air stagnation, the influence of unequal weights of air cannot be trusted to in the tropics to the extent feasible in temperate climates, where heating of the interiors is of prime importance, and that, consequently, in construction the ideal to be sought is as near an approach to open air conditions and as full freedom as possible from any form of obstruction to air movement both within the building and external to it consistent with protection of the patients from direct rays of the sun, and that to this must be added arrangements for temporary protection from high winds and drifting rains.

These ends, I think, can best be secured by seeing that the whole building is so placed that such small movement as may exist may not be interfered with by trees, high surrounding walls or other buildings in the proximity, by the use of broad and fully open verandahs, placing the ceiling of wards not beyond heights usually held to afford available breathing air, namely, from 13½ to 14ft, and arranging that the windows at the corners shall commence at 2ft 6in

from the floor-level and extend from 6in to 1ft from the ceiling, so as to encourage motion in the entire mass of air between opposite windows. Excluding the frames the windows should not be less than 3ft in width. The height of the window proper should be 8ft, up to the junction of the verandah roof with the wall, which would occupy 6in, and immediately above this would be a ventilator 3ft x 2ft protected externally by a monkey-top or roof projection, thus leaving 6in to 1ft to the ceiling, as the case may be in regard to the total height of the wall selected. The result is a window of 10ft height, if the ventilator be included in the reckoning. The windows and ventilators should be flush with the internal face of the walls, and be made of the largest available sheets of glass, preferably set in steel frames such as made by Messrs Hope & Sons, Lionel St, Birmingham. The ventilator should work on horizontal pivots, the upper half of the window on vertical hinges, and the lower on vertical pivots, so as to allow the window proper to be regulated in four parts. No venetians should be employed, they are dust collectors and are inappropriate in the modern hospital.

The arrangements would therefore closely assimilate those aimed at in the present day wards of infectious diseases hospitals, which both for cheapness and sanitary efficiency is the type, I hold, should be followed in the tropics for hospitals generally. When in the presence of high winds and drifting rains, notwithstanding the broad verandahs, closure of the windows would become necessary, the ventilators would still *suffice temporarily as inlets and outlets*.

Such large windows are apt to be considered expensive items, but, having regard to the great height allowed ward walls in even recent times in India, there is some offset in the decreased height of walls suggested.

As to the total area of glass per floor space, the economist would point to the less amount allowed in European standards, but, in temperate climates, after satisfying the admission of light—air being arranged for by special inlets and outlets—the architect realizes that excess of glass implies loss of heat during the cold weather from the interior, and limits it accordingly. But no such standard need be contemplated in the hot plains of India. Here windows should not be solely for the admission of light and casually for aid of ventilation by calculated inlets and outlets in artificially heated rooms, as in European practice, but should be regarded as spaces in opposite ward walls for perfilation, furnished with covers of easily cleansed material (glass) having the advantage of translucency, which are intended to be closed only during periods of unusual high wind and drifting rain. Indeed, in the tropics I think that the glass area should possess a standard not in relation to the floor space but to the wall space.

Against the small height to the wall plate advised, the objection can be urged that heat conduction from the roof and ceiling is facilitated, but this is discounted by the absence of accumulations of heated air in any dead space, whilst very ordinary foresight as to roof and ceiling construction will diminish heat conduction.

Possibly the cheapest way to get over the difficulty would be to line with wood backed with sawdust Stoney's arched roofing, as employed in certain buildings in the Madras Railway—especially as no ceiling would be necessary.

A well-known architect, Mr Henman, in supplying for official purposes a type-plan for hospitals in the tropics, evidently foresaw that the "paper-weight" theory of the Sanitary Board I have alluded to, could not be trusted, and he sought to get out of all difficulties by suggesting the full adoption of the plenum system combined with an cooling, and presented figures for up-keep which he held not impossible financially in India.

A further way of meeting conditions is to give each patient a separate room served by broad double verandahs common to the rooms, as in certain sanatoria, and so constructing the sides of wood or asbestos sheets in frames that they can be folded back, so as to leave the patient and the interior of the room fully exposed to view and the external air. These sides can be replaced quickly as required. The germ of this idea I saw many years back at a missionary hospital at Madua. The method should be particularly useful for special diseases in large hospitals, and for mixed cases in very small hospitals. An estimate for rectangular wards compared with one affording the same accommodation as the type described, I found differed but little in cost.

In reality, in endeavouring to meet economy and yet retain efficiency in hospital construction, the prime point is not the cutting down recklessly the floor space per bed and reducing the area of doors and windows to a minimum, as the hasty economist would desire, but a careful classification of patients according to their requirements, even in the smallest class of hospitals. Thus, a large proportion of patients in mufassal hospitals suffer from medical diseases of a nature requiring less air space than the less numerous septic, pneumonic and infectious fevers, severe surgical operations, dysentery and diarrhoea, phthisical, midwifery and observation cases. It is therefore both sound medical practice and financial economy, instead of giving an average, or extravagant, floor area per patient by rule of thumb, to arrive at a correct estimate of disease requirements in the particular locality concerned, and specify association or single wards accordingly.

I have already shewn that these experiments do not touch the question of area per head, but they at least point to the necessity for as near an approach as feasible to open air conditions,

and absence of all obstruction to air motion. Personally, I think it exceedingly unlikely that areas allowed in European practice can be safely decreased in India, as in the absence of brisk air motion—natural or artificial—it is difficult to fully compensate for an initial error of insufficient floor space, even where doors and windows of reasonable area are available and are correctly placed. Results in this sense kindly obtained for me with Haldane's apparatus by Surgeon-General (then Major) Bauneiman when Superintendent of the King Institute, with my remarks thereon, will be found in Madras Govt G O No 175 (Educational) dated 12th March 1904.

This is a long sermon on so small a text, but I would urge in excuse that the subject of ventilation of Hospitals and Jails is well worthy of more investigation in India than it has obtained, and now that Haldane's apparatus can be procured by any Civil Surgeon at little cost (thus rendering unnecessary the impediments of large jars, solutions, etc., formerly requisite for estimating the Carbonic Acid contents of rooms) it ought to be possible to rapidly accumulate data of much economical and medical importance as to minimum measurements in construction consistent with De Chaumont's permissible limit of an impurity—6 vols Carbonic Acid per 10,000 of air. A much greater grade of impurity had been advised by Haldane for factories, but few with practical experience would desire any tending towards that standard for the sick.

To take a member of a local body (together with his olfactory nerves and sanitary conscience) to a ward on a stagnant air night, and there demonstrate to him by this apparatus the mimical influence of tiny windows and tiny verandahs blocked with accessory rooms (to which arrangement the soul of the economist is wedded) even when the area and cubic space are not at fault, will go more towards loosening the purse strings than much stereotyped official correspondence.

INTESTINAL PARASITES IN THE WARDHA DISTRICT

BY M FOSTER REANEY, M B (LOND), D P H,
CAPTAIN, I M S,

Civil Surgeon Wardha, C P

THE following note gives the results of a small enquiry, which I have made during 1911 into the prevalence of intestinal parasites in the Wardha District of the Central Provinces. The enquiry has resolved itself into two parts—

1. An examination of as many specimens of faeces as I could obtain, one stool only being examined from each person. The people providing the material consisted of—

(a) The police and their families living in the police lines at Wardha (127 people)

(b) Some of the staff and in-patients and their friends at the Main dispensary, Wardha (56 people)

(c) Under-trial and recently-convicted prisoners at the Wardha District Jail (153 people)

2. Following on the above, I examined a second series in which only material from people whose stools I could repeatedly examine, was made use of, my object being to see what proportion of cases was missed at a single examination. Here I was limited to prisoners and some of the patients in the Main dispensary.

Method of Examination—The method employed has been to examine a small portion of the stool rubbed up in a drop of glycerine. I find that this clears up the general debris and renders the examination very much easier. The glycerine slightly crinkles up the capsule of the ankylostoma egg and renders the detection of amœbæ or the embryo of *steiracalis*, almost, if not quite, impossible. However, it is so superior to the usual water preparation that I prefer it to the latter, as far as the detection of ova is concerned. Centrifugalizing or the growing out of embryos, as recommended by Boycott, were both out of the question, as I did not possess the necessary apparatus.

Results—In series A where only one stool from each person could be examined, the results were as follows—

	No examined	Ankylostoma.	Round worm	Oxyuris ova	Ty Disp	H nana	T sag	No of people infected
Men	265	33	7	1	1		3	41
Women	77	4	4	1				6
Children	20		3	1	1	3		6
TOTAL	362	37	14	3	2	3	3	53
Per cent		10.5 %	3.9 %					14.6 %

In series B, where repeated examinations could be made if necessary, the results were—

	No examined	Ankylostoma	Round worm	Oxyuris ova	Ty Disp	H nana	T sag	No of people infected	No of stools exam
Men	59	39	3	2	3		1	42	180
Women	8	7						7	15
Children	1					1		1	1
TOTAL	68	46	3	2	3	1	1	50	196
Per cent		66.8 %						73.5 %	

This gives a very much higher percentage of infection with *Ankylostoma* than series A gives. Even these results are probably below the truth (*vide* Boycott's Milroy Lectures, *Lancet*, March

and April 1911) The need for more than one examination is shown { by the following cases in which *Ankylostoma* were found —

Total found infected	No of stools examined before ova were found					
	1	2	3	4	5	6
46	24	14	3	3		2

I had doubtless become more expert with constant practice at preparing the necessary specimen, and so finding the ova at the first examination

The number of people found to harbour more than one parasite was as follows —

2 varieties	3 do	4 do	TOTAL
7	1	1	9

All castes were found to be infected, among the 83 people found to be harbouring *Ankylostoma* were 11 Brahmins

Ankylostomum duodenale — From the figures given above it is evident that infection with this worm is widely spread. At the same time the infection cannot be considered to be severe. It has been the exception to find more than one or two ova in one slide. In a patient from the Balaghat district suffering from early nerve leprosy, ova were constantly present in his stool for four months and as many as four or five could be found with ease in one slide. Treatment with thymol caused the expulsion of 25 worms in 3 stools (7 males and 18 females). No one so far has shown any of the classical symptoms of ankylostomiasis but all I have examined show a certain degree of anæmia. I have tested 25 roughly with Hall's rotary hæmoglobinometer, excluding those persons suffering from any other complaint which might give rise to anæmia. The results obtained were as follows —

90% hæmoglobin	ml
80% "	11
70% "	9
60% "	5
	25

I have made differential blood counts in 19 cases with the following results —

Percentage of eosinophiles	under 4%	ml
" "	4 to 5%	3
" "	5 to 10%	6
" "	10 to 15%	6
" "	15 to 20%	3
" "	25 to 30%	1
		19

According to Boycott (Mihoy Lectures) the anæmia in ankylostomiasis is a hydræmic plethora as in chlorosis. In four cases examined by me, I found a low hæmoglobin index as in chlorosis, with little or no reduction in the number of red-cells. In addition each showed more or less leucocytosis which could be accounted

for by the increase in the number of eosinophiles

	1	2	3	4
Red cells	4,900,000	5,000,000	5,200,000	4,000,000
Hb %	60%	60%	80%	70%
Hb index	6	6	8	8
White cells	14,000	10,000	10,000	9,000
Eosinophiles	13%	10%	8%	5%

I have examined a number of worms. They were all typical *A. duodenale*. I have yet to find a really satisfactory method of making permanent preparations of the ova of this worm. One attempt led to an interesting result, showing the resisting power of the ova. A small portion of feces was shaken up in a test tube containing 1 per cent formalin, and put aside to settle. Other work prevented my examining the deposit for some 48 hours. The formalin was strong enough to prevent bacterial action as shown by a total absence of faecal odour. The *ankylostoma* eggs, however, had gone on developing, so that instead of the segmented yolk as in the original stool, the larva could be seen within the egg.

I have obtained no evidence as to the mode of infection and have seen nothing resembling the "ground itch" of Assam.

Hymenolepis nana — The ova of this parasite were found four times. The first three cases were in children of the same family, aged, respectively, 5, 4, and 3 years. None of these children showed any symptoms whatsoever. Permission was obtained to treat the eldest child — a boy — with male fern, and six specimens were picked out, only one of which possessed a head. The fourth case was a Gond boy in the under-trial barrack, aged about 12 years, who also showed no symptoms. At least 100 worms were expelled from him by male fern and a dozen perfect specimens were picked out. The worm is very fragile, particularly at the neck and requires careful handling.

The *H. nana* possesses 4 circular suckers and a single row of about 22 minute hooks. An entire worm measures about 15 millimetres in length and contains 200 to 250 minute segments. It is an uncommon worm in India. The ova were first described as occurring in the stools of the natives of India by Major Clayton Lane, I M S, (*I M G*, April 1904 and April 1909), he failed, however, to obtain any strobila. Captain Davenport Jones, I M S (*I M G*, July 1910), found several strobila in an European child. Colonel Banatvala, I M S, also found the eggs in a patient in the Nagpur Lunatic Asylum, while making a systematic examination of the inmates' stools, but also failed to get any strobila.

Blood examination of the two cases, from whom worms were obtained, gave the following result —

Boy aged 5	Eosinophils	Hb.
Do 12	23% 8%	— 80%

The absence of symptoms in the 4 cases is quite contrary to the teaching of the text-books. It has been suggested that this worm is identical with a tape-worm found in the rat. It is much smaller, however, than the worms found in the rats in this district. The rat tape-worm measures some 2 or 3 inches or even more in length and has 14 to 16 large hooks.

Taenia saginata—This tape worm was found 4 times. In each case one or two segments were found as well as the ova in the stools. In only one case did the patient know of the worm's presence. The solium was not found.

Trichocephalus dispar—This worm seems uncommon in this district as the ova were only found 5 times. One case in which only these ova were found showed a marked eosinophilia, but as only one stool was examined, the man may have had other parasites as well.

Oxyuris vermicularis—The ova, as distinguished from the worm, were found only 5 times.

Ascaris lumbricoides—This worm was found in 17 cases. In only one case could any symptoms be ascribed to it. I was asked to see a small girl who was said to have dysentery with griping pains and to be very ill. Round worm ova were found in her stool and a dose of santonin caused the expulsion of 30 worms, the child rapidly becoming quite well. Major Clayton Lane, I.M.S. (I.M.G., April 1904), states that santonin will often expel round worms in cases where no ova have been found in the faeces. I cannot agree with this as I had santonin administered to 60 under-trials and convicts, in whose stools no ova had been found and in no case was a single worm expelled. On the contrary, I have been struck with the enormous numbers of ova in the faeces, produced by one or two female worms.

Strongyloides stercoralis—I have not found the ova of this worm in a single case so far. I think that my method would prevent my finding the larvae. At the same time I have made a number of water preparations with the object of finding the larvae but unsuccessfully. I do not think, therefore, that it can be common.

Conclusion—In spite of the small number of people in series B, I think I have succeeded in showing that infection with intestinal parasites, especially the *Ankylostomum duodenale*, is common in this part of the Central Provinces, though the degree of infection is low and nothing compared with that met with in damp parts of India and Assam. Although cases with the classical symptoms of ankylostomiasis are doubtless rare, still I think that the fact that so many people show a certain amount of blood changes is against our dismissing this wide-spread infection as of little or no practical importance. The examination of faeces is never particularly pleasant work, and it is by no means easy to

obtain the necessary material. Even in a jail the under-trial prisoners do not like having their stools examined. The more ignorant apparently think that the intention is to "work magic" on them. The general idea amongst the police and their families—so I was told—was that we were preparing some new kind of medicine! In view of these prejudices I intend to confine my further investigations, as far as apparently healthy people are concerned, to the "under-trials" in the jail. As the latter is very small, the number of people available will be somewhat limited. This fact is my only excuse for publishing what may be considered an unfinished investigation.

I have to thank two Sub-Assistant Surgeons, Rao Sahib Govind Vithal and B. N. Mangulkar, for their great assistance in obtaining the necessary material for me.

SANITATION IN THE PLAINS

By L. R. RYLANDS,

CAPT., I.M.S.,

96th Bearer Infantry

At present the latrine in India is, as usually met with, a most insanitary arrangement, dark, airless and evil smelling.

In the *Indian Medical Gazette** I have already described a type of latrine for hill stations which has proved extremely satisfactory.

The latrine here described is intended for the plains and is a distinct improvement on the usual model.

My object is to expose the whole interior of the latrine to direct sunlight for some hours in the day and provide free ventilation.

The accompanying figures explain the plan.

The latrine is constructed of galvanized corrugated iron.

Outside Screen—This is sufficiently high to secure privacy. If the ground be flat and not overlooked by buildings, it need not be more than 6 ft. high. Between the lower border of the screen and the ground there is a space of 1 ft.

Compartments—Platform just sufficiently high to take receptacle. If too high, floor is sure to get fouled. Note free space between platform and door. Both platform and floor are covered with cement which is continued forward to the gutter. The floor has a slight incline towards the gutter.

The Gutter—Consists of glazed drain pipe cut in half longitudinally and has a slight fall from the dead end towards the outflow, at the outflow the gutter projects over a pit which is lined with cement and is of such a depth that a good-sized receptacle can be placed under the projecting end of the gutter.

SANITATION IN THE PLAINS

BY CAPTAIN L. REYNOLDS, I.M.S.,

96th Bengal Infantry.

FIG I. IN PLAN

Scale $\frac{1}{4}$ Inch to 1 Foot

Front Screen 12'

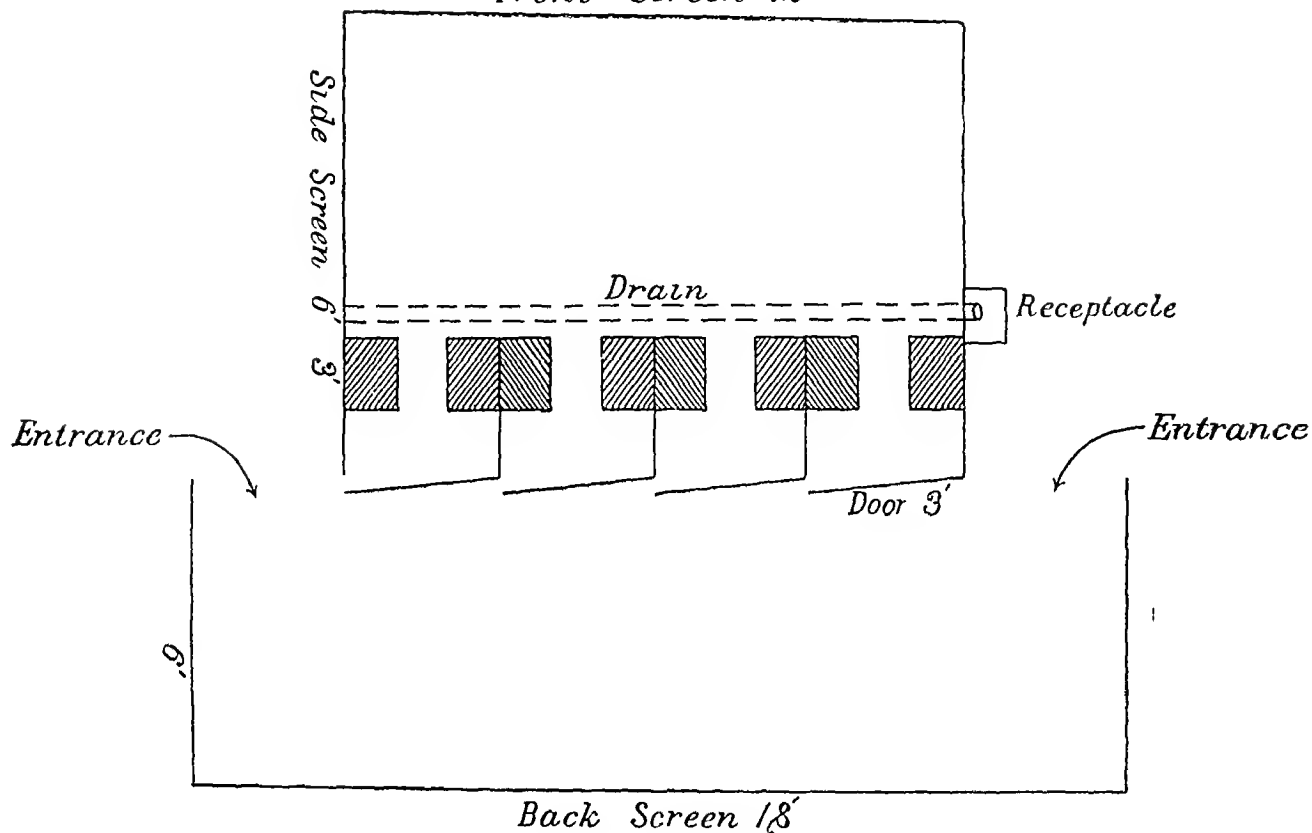
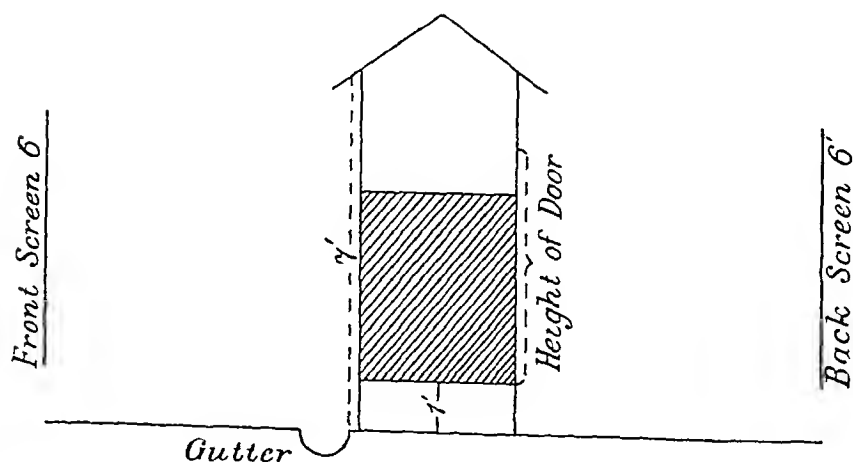


FIG II SECTION FROM FRONT TO BACK

Scale $\frac{1}{4}$ Inch to 1 Foot



Side screens of compartment—These are the height of a man's head when in the squatting position thus leaving a free space between side screens and roof. Below, the screen ceases at the level of the platform.

Door—The lower border of the door reaches within a foot of the ground and is 5 ft 6 in high. Between the door and roof there is a space of 1 ft 6 in when the door is wide open there is a gang-way 3 ft wide.

Site—If possible, latrine should face south. The following are the advantages of this type of latrine.

The front of the compartment is absolutely open and direct sunlight floods the interior in the morning and afternoon, during the hottest time of the day the platform is sheltered from the sun by the roof.

The only entrance or exit is through the doors of the compartments and therefore privacy is maintained. The spaces between the screens and ground and also between the doors and roof allow free ventilation. The floor and platform of the compartments are impermeable and can be readily washed out, the dirty water passing along the gutter into the receptacle.

For Europeans commodes should be provided. The following is a useful pattern. The seat consists of a ring of wood which fits loosely into a ring of angle iron. This is supported by three legs of angle iron. The height of the commode should be just sufficient to allow an enamelled iron receptacle to pass easily between the seat and the floor. The receptacle is held in position by iron slots fixed to the under surface of the seat. The seat can be readily removed and cleansed. Ample space between the compartments and the front and back screens is very necessary to ensure free ventilation and the admission of plenty of direct sunlight.

A Mirror of Hospital Practice

SYPHILIS IN TIBET

By R F D MACGREGOR,

LIEUT. I M S,
Gyantse

THE commonest disease in Tibet is undoubtedly syphilis. Venereal disease as a whole is very prevalent, but gonorrhoea and soft sore are comparatively uncommon. From January 1st, till August 31st, 1911, 439 persons attended the Civil Hospital here of these 144 were suffering from venereal disease, giving a percentage of 33. A great many of the cases of syphilis are of a severe nature, largely because the people put off coming to hospital till the disease has taken a firm hold, and also because some of them go for

treatment to Lamas. It is only when the latter have experimented and failed that the hospital is resorted to. It is a curious fact that the stress of the disease seems largely to fall on the bones and joints. The following cases illustrate this—

(1) *S Ch M*—Admitted on August 19th, 1911, complaining of inability to bend his right elbow. He had been attending hospital last December and January for syphilis, but had left before he had derived much benefit under chloroform, adhesions in the elbow joint were broken down and the patient has now very good movement in that joint.

(2) *C Ch M*—A similar case to the above. Patient had never been under treatment for syphilis. He was quite unable to bend his elbow and it was evident that very dense adhesions had formed. The patient is still under treatment.

(3) *P T F*—Admitted late one night complaining of great pain over the heart and swelling of the right arm. Under palliative treatment she passed a fairly good night. Next day on examination she proved to be a well-marked case of syphilis. The swelling subsided in a few days and she has now greatly improved, though transient swellings occurred in the left elbow and right knee joints.

Difficulties in treatment—Apart from the fact that those suffering from syphilis tend to put off coming to hospital till very late, there is one disease prevalent in Gyantse which has a very important bearing on treatment. That is scurvy. It is the exception to have a patient in hospital whose gums are not spongy, many too suffer from hæmorrhages chiefly from the nose.

At first all cases of syphilis here were treated by mercurialunction, but it was found that almost immediately the patients' mouths got into a very bad condition for the reason mentioned above. Much more satisfactory results have been given by the intramuscular injection of ten minims of mercurial cream.

The weekly interval which elapses between each injection is utilised in getting the mouth into as clean a condition as possible.

I have had the opportunity of giving "*Salvarsan*" to two patients, both doses were given intramuscularly and the results have been extraordinarily good.

1 *D T T M*—Admitted on 23rd August 1911 suffering from a very large ulcer completely surrounding the penis, there was also a deep ulcer below and to the right of the umbilicus. He suffered from sores in the mouth and there was a pustular rash on the backs of the thighs. *Salvarsan* was administered a week after admission, 6 gm being injected into the muscles of the buttock. The patient experienced very little discomfort after the injection. The sores

at once began to heal and the rash vanished. So well has the patient progressed that probably a second dose will not be given.

2 P C T F—Admitted on 20th July 1911 suffering from syphilis. It was one of the worst cases I have ever seen. There were sores in her mouth and on her vulva, she had a very foul vaginal discharge. There were large ulcers on her forehead, front of her neck, inner side of right arm and round the knees. In addition to this she was $7\frac{1}{2}$ months pregnant.

The first injection (6 gm) was given on 23rd July 1911. There was very little after-effect and patient left hospital a few days later, saying she felt much better. On 10th August she returned for her second injection. This caused extreme collapse, her pulse becoming very weak and temperature rising to 100.6° F. Next day she was much better, the only complaint being some stiffness in the leg and thigh. All the sores on face, neck and legs cleared up as if by magic and the patient left hospital twenty days after this injection practically cured.

It will be very interesting to see the child of this patient.

THE TREATMENT OF AURAL SEPSIS

By LAWRENCE G FINK, M B, C M,

Civil Surgeon, Myaungmya, Burma

SUPPURATIVE diseases of the ear are very commonly met with in dispensary practice and the treatment usually adopted consists in syringing with an antiseptic lotion and the insufflation of an antiseptic powder or the instillation of ear-drops.

In abdominal surgery, as in the opening of an appendix abscess, the danger of spreading infection by energetic washing, has been recognized and the practice has been abandoned, but in aural sepsis syringing is still done. Dr W Stuart-Low, F R C S, Surgeon, Central London Throat, Nose and Ear Hospital, condemns this practice most emphatically in the *Practitioner*, April 1910 (pages 476-84). He points out that the dangers incurred in syringing out the middle ear in the presence of a chronic discharge are very great indeed. All watery fluids, he says, encourage septic change and bacterial growth and enhance what it is the main object of all treatment to prevent and avoid.

The effect of the syringing, he further points out, is to cause swelling of the semi-desiccated accretions and accumulations, and pressure on the surrounding brain and labyrinth with dire and, it may be, fatal consequences. His treatment consists in very carefully wiping out the ear with boracic wool and then forcibly driving in vapour of a dark coloured liquid of oily consistence, called Kelvolin. This contains 40 per cent of

phenol and 35 per cent of highly refined neutral products from coal tar. It is said to be a non-irritating germicide, is anæsthetic, has a softening action on incrustations and considerable penetrative power. It is easily volatilised, and, used in the manner described by him, has given satisfactory results in many cases of suppurative middle ear disease in its various varieties and stages. The Kelvolin is introduced into the ear as a vapour by means of a volatilising inflator made by Messrs Maw and Sons, London. This treatment has much to recommend it, being scientific and thorough but I have no personal knowledge of the apparatus nor of the chemical product referred to. Working on somewhat similar lines I have had good results in two cases from the use of Parke, Davis and Co's "Chloretone Inhalant" which is said to be made up as follows and has an antiseptic, anæsthetic and emollient action—

Chloretone	1 gramme
Camphor	25
Menthol	25 "
Oil Cinnamon	5 "
Refined Liquid Petrolatum	93.5 "
	107.0

In one case treated a year ago, when syringing with boracic lotion and the use of antiseptic powders and drops failed, the ear was carefully wiped with boracic wool and "Chloretone Inhalant," sprayed into the ear with an atomiser spray apparatus and through a bent laryngeal tube-attachment. The patient was a European with a chronic suppurative discharge which had lasted about 3 months. There was tinnitus and some loss of hearing on the affected side. The drum of the ear was swollen and there was excoriation of the mucous membrane of the external auditory canal. After about a fortnight's treatment the discharge ceased and hearing was completely restored. In another case the discharge had lasted about six or seven years and there were occasional acute exacerbations causing much pain. This patient, also a European, was similarly treated, and in less than a month the discharge stopped and there has been no recurrence during the past 6 months.

It was not my intention to publish my experience based on only two cases, but I do so now in the hope that instead of syringing this treatment may be tried and reported on by others and also because it in some respects resembles that of Dr Stuart-Low, the only difference being that he has used Kelvolin and a special volatilising-inflator, whereas I have used "Chloretone Inhalant" and a simple atomiser.

I may add that any throat affection causing or keeping up the aural sepsis is carefully treated. Formamint has been used with good result. "Chloretone Inhalant" spray is also serviceable.

Indian Medical Gazette.

FEBRUARY

THE RECOGNITION OF AMERICAN DEGREES OR DIPLOMAS

WHEN the list of qualified medical practitioners, published in Bengal by the Inspector-General of Civil Hospitals, reached the United States, the Council of Medical Education of the American Medical Association made a representation to H E the British Ambassador at Washington, pointing out that in the list of recognised medical schools in all parts of the world which was printed in that List, the names of "only a few of the American Medical Schools" appeared, whereas, it was pointed out, that for a considerable time past many other Medical Schools in the United States have been "recognised" in Great Britain, and they requested that the list of schools to be recognised in India should correspond with that of the Examining Board in England.

Now, no one with any knowledge of medical matters in the States would for a moment fail to recognise the excellence of such institutions as the medical departments of the Johns Hopkins, the Cornell, the Yale or the Chicago Universities. As a matter of fact, in the list referred to, the following Universities and Medical Schools in the States are already "recognised" by the Bengal Government, *viz* The University of Buffalo in New York, the University and Bellevue Hospital of New York, Harvard University, the University of Michigan at Ann Arbor, the University of Pennsylvania at Philadelphia, and the Jefferson Medical College Philadelphia a fairly representative list surely?

This matter obviously was one that could only be decided by a reference to the General Medical Council of the United Kingdom, as at present no such Council exists in India. On this reference being made, the General Council of Medical Education and Registration replied to the effect that "The General Medical Council does not recognise any American School of Medicine, and no American qualifications entitle their holders to registration in the United Kingdom. The Council has no official knowledge of the standing of the schools referred to, and since reciprocity with regard to medical practice does not exist between the United Kingdom and

the United States of America, the Council has no power to recognise qualifications granted in that country." This statement very definitely disposes of the official recognition of degrees and diplomas granted in the United States, and we are strongly of opinion that the Government of India should also in this important matter follow closely the practice of the General Medical Council of the United Kingdom, and refuse to recognise such degrees by admitting them into an official publication such as the List of Practitioners in Bengal.

There is, however, another question, and this is what the American Medical Council ask for, namely, the recognition of the teaching and curriculum of lectures, etc., given by other Medical Schools in the States beyond those already noted in the list quoted above.

This is an entirely different matter from recognising the degrees or diplomas of a University or other such body. It is obvious that such recognition must depend upon the knowledge in the possession of Government of the work done in these schools, and it is difficult to see how such knowledge can be obtained. It may be right to recognise the teaching of the schools already given in the list, such recognition being, we imagine, based on the good repute of such institutions. There could also be no difficulty in recognising the lectures and teaching of such an institution as the Johns Hopkins University, but as long as India is without a Medical Act and a Medical Council, we are strongly of opinion that no more schools should be recognised, the more so as but few Indian students take courses in the States and then apply for examination in India.

It is true that in England the Conjoint Board does publish a list of American qualifications which are recognised *to the extent of admitting their holders to the examinations of the Conjoint Board, with little, if any, further curriculum*, but the Medical Council strictly examines such cases, and if it sees fit can remonstrate with such examining body and has the power in extreme cases of reporting such a body to the Privy Council if it considered that the body was not fulfilling its statutory duties.

In India so far we have no Council which could exercise such supervision and control, and we are strongly of opinion that when such Medical Council is brought into existence in India, it should closely follow the example of the General Medical Council of the United Kingdom.

and refuse to recognise or register degrees or diplomas obtained in America so long as reciprocity does not exist, and moreover that it should exercise similar strict vigilance and supervision over applications for recognition of diplomas, degrees or teaching, before allowing the student educated in the States to appear for an examination for a degree or license in India

Current Topics.

AN I M S MANUAL

We have already called the attention of our service readers to the valuable manual compiled by Majors Bruce Seton and Jay Gould, I.M.S., on the Indian Medical Service

It is a veritable guide book and literally crammed full of useful information to men of all ranks in the service. Major Bruce Seton in his capacity as Secretary to the Director-General will certainly have saved himself the trouble of replying to hundreds of letters yearly by the publication of this useful little book.

We need only indicate a few of the contents of this book as we expect by the time, this is read in print in February next, the book will already have become widely distributed, but for the benefit of the few who will then not have got the book, we may give a short notice of it.

The first chapter deals with the strength of the I.M.S. which is given as 726 not counting 11 men seconded for special duty or for the bacteriological department, of these 726 there are 272 in military employ, and including a "Special War Reserve" of 26 officers who hold no cadre appointments. Of course it is known that roughly three-quarters of the men in civil employ are liable to recall to military duty in emergencies, such as the Chital Campaign in 1895, the Frontier blaze in 1897, and when it was thought necessary to send far more medical officers than ever were needed or used to China in 1900.

The Royal Warrant of 13th March 1908 is given in chapter II, and the remark about date of a Lieutenant's Commission should be read with remarks on retiring pensions at page 117 where the anomalous three methods of calculating total service for pension are given. Is it not time to put all officers on one footing and to date all service for pensions from the date of the result of the examination as in the case of all those who entered the service on or after 1st September 1902?

We especially commend the chapter on "Selected Lieutenant-Colonels" to the perusal of senior men, for by personal experience we know how much ignorance prevails on this matter. The remarks on extensions of service are also very useful.

The chapter on "accelerated promotion" and on the kindred subject of "study leave" is fully dealt with, and all recent orders embodied and a complex subject made as clear as possible.

Chapter IV deals with the military side of the I.M.S. promotion examinations, miscellaneous appointments and with "specialists."

Chapter V deals with the civil side of the I.M.S., and while our authors rightly emphasise the primarily military nature of the service, they admit that the majority of men enter the service with a view to obtaining civil employment and it is this civil side which hitherto has, and we hope in the future will attract the best men from the Medical Schools. It is only in this way that the I.M.S. can remain a medical *corps d'élite*.

The method of joining civil employ is fully explained. We note that the Madras and Bombay College appointments are in the gift of the local Government, and, of course, this will also apply to the new Presidency of Bengal and will be some compensation for the considerable number of unhealthy districts which will soon constitute Bengal.

The note on dress of officers in civil employ (on page 45) is scarcely up-to-date. Though by the new orders officers permanently in civil employ need not keep up uniform, this they can only do if they are content to be taken for civilians.

On page 50 the number of Civil Surgeons in Bengal is put as 13. This means reserved appointments only. More detail is given of the appointments under the Foreign Department. The details of the appointments in the Jails and Sanitary Department are accurate and complete. The hard fate of *officiating* Deputy Sanitary Commissioners and the difficulties of living as married men in peripatetic appointments are overlooked.

We are glad to see the *Indian Medical Gazette* recognised as "the Corps Journal."

There is a good chapter on the College appointments in the three Presidency towns and at Lahore and Lucknow. The Anatomist and the Chemical Departments are fully described and details are given of many other appointments, such as Health Officers, Police Surgeons, Medical Officerships in Native States, etc.

Chapter VIII deals with pay and allowances, and at page 93 a useful list of miscellaneous allowances is given, field allowances, specialist pay, house rents and other local allowances are explained, also unemployed pay, half pay and also advances.

Chapter IX deals with civil pay and allowances and the important subject of *acting* allowances which apply to so many junior officers is explained. The details of local allowances given to Civil Surgeons are not in all cases complete.

The chapter on pensions is very good and full of useful information in an accessible form,

and the not always understood subject of additional pensions, extra or compensating pensions is clearly explained. The rules for good service pensions are not as clear as they might be, and it is not clear how many such there are, nor what rank of officer usually gets them. No doubt the references to A R I, Vol I, and Army Circulars would clear this up, but these rules might with advantage have been quoted in full.

Injury and wound pensions are clearly dealt with, and there is an interesting note on the commutation of pensions.

The chapter on family pensions, both subscribed for and under Royal Warrant is good, and there is reference to the useful Passage Insurance, of which more use might be made, but more detail might be given as to the procedure whereby Lt-Colonels of over 25 years' service may subscribe to the higher rate of pension [(class I), A R I, Vol I, app III, para (9) (2)]. We know of cases in which applications have been sent in too late for this. The chapter on leave rules is excellent, but we must remember that the 20 per cent leave reserve is fast becoming too small, owing mainly to men taking long spells of leave, including the useful and necessary study leave.

We have indicated above how valuable this manual will be to all men in the service, and no doubt there will be a demand for it in the medical schools at home.

We congratulate Majors Seton and Jay Gould on its production and thank them for having brought out so useful a book. In another edition we would recommend the addition of a chapter on I M S uniform. Men in civil employ are not kept fully informed as to changes in military millinery, and at the time of the King-Emperor's visit to India in one week two contradictory orders were issued on the subject of undress uniform. The service being primarily a military one, uniform should be kept up, but if so, it must be worn correctly, and all the necessary and unnecessary changes should be regularly and duly notified to all officers, which is not now done.

THE MEDICAL RESEARCH FUND

THE Governing Body of the Research Fund met in Bombay on the 15th November to consider the Articles of Association, and to appoint a Scientific Advisory Board. The following members were present —

The Hon'ble Mr S H Butler, President
The Hon'ble Mr L Porter
The Hon'ble Surgeon-General Sir Pardy Lukis, I M S
Sir David Semple, Kt
Kumar Mahanuj Singh
Major S R Christophers, I M S
Captain A G McKendrick, I M S

The first meeting of the Scientific Advisory Board elected by the Governing Body of the Research Fund was held at the Plague Laboratory, Parel, Bombay, on Wednesday, 15th November 1911.

Sederunt — Surgeon-General Sir Pardy Lukis (in the Chair)

Sir David Semple.

Major Christophers

Captain A G McKendrick (Secretary)

(1) *Vital Statistics* — Resolved that Majors Harvey and Christophers and Captain McKendrick be asked to report on the advisability of forming a committee to study the Indian death and birth rates, and the causes of decrease in populations, and also to enquire into the present methods of registering vital statistics.

(2) *Medical Entomology* — Resolved that a committee be formed to put up proposals as to the co-ordination of work on medical entomology throughout India, as to the study of insect-carriers of disease, and as to the advisability of publishing an Entomological Bulletin.

The following members were elected —

Major Christophers (Chairman)

Major James

Captain Chagg

Captain Mackie

Captain Patton and Mr Howlett (Secretary)

(3) *Town-planning* — The Secretary was instructed to write to the Hon'ble Mr L Porter and ask his opinion on the formation of a committee to study the subject of town-planning. In the event of his agreeing to direct such a committee, the line of action and the appointment of members to be left to him.

(4) *Popular Hygienic Education and Propagandism* — It was resolved that, as Major Glen Liston is already engaged in a scheme of Popular Hygienic Education and Propagandism, that he be asked to report on its success, and on the feasibility of its general application throughout India.

(5) *Malaria* — The malaria committee already in existence will in future be considered as one of the sub-committees acting under the Scientific Board.

(6) *Kala-azar* — It was resolved that a committee be formed to study Kala-azar. The following members were elected —

Surgeon-General Bannerman

Major Christophers

Dr Bentley. The Secretary was instructed to ask them to put up proposals as to the line of research to be adopted.

It was resolved that the Governing Body be asked to place two workers at their disposal (to be selected by the Sanitary Commissioner with the Government of India, and paid out of the Central Research Fund).

(7) *Cholera* — It was resolved that the Director of the Central Research Institute be asked

to form a committee, to put up proposals for the investigation of cholera on newer lines

(8) The Secretary was instructed to write to Sir Ronald Ross (Honorary Consulting Member of the Scientific Board) asking his advice as to the employment of a whole-time malario-metric worker

(9) The recommendation of the Malaria Committee that the services of an entomological specialist should be secured, was placed before the Board. Sir Pardy Lukis stated that the question was at present under consideration by the Government of India

(10) It was resolved that the Governing Body be asked to sanction a grant of Rs 500 for the purchase of books for the library of the Malaria Bureau

(11) A proposal had been received from Colonel Firth, Sanitary Adviser to the Principal Medical Officer, His Majesty's Forces in India, asking for a grant towards a scheme for obtaining and circulating journals amongst the Divisional and Brigade laboratories. It was resolved that the Governing Body be asked to sanction a grant of Rs 300 for this purpose

(12) *Central Research Institute*—It was resolved that the Governing Body be asked to finance the scheme for the development of this institution and for the fitting up of a Malaria Research Laboratory in connection therewith

(13) It was resolved that the Governing Body be asked to meet the cost of the deputation of Major S P James, I.M.S., to study Yellow fever in the Panama with a view to drawing up a report as to measures for averting the danger of the introduction of Yellow-fever into India, and for stamping out the disease should it appear

AMENDED RULES ABOUT FEES

THE following has been published in the *Gazette of India*, December 1911—

"No 1192—In supersession of the orders contained in the Home Department Notification No 607, dated the 1st July 1907, and of all existing orders on the subject, the Governor General in Council is pleased to make the following rules, which will be applicable to British India and Native States, regarding the receipt by medical officers of Government of fees (including honoraria or presents which may be offered for services rendered) for professional services, *whether for an ordinary visit, or consultation, or confinement or a surgical operation, or certain cases*—

(1) Whenever attendance on a Ruling Chief or his family or dependents, or on an Indian of position who holds a hereditary title conferred or recognized by Government, of rank not below that of Raja or Nawab, or his family or dependents, involves the absence of a medical officer from his station, he shall be permitted to demand or receive such fees as may be arranged between himself and the person employing him, provided that he does not, without the special permission of the local Government, obtained as provided below, demand or receive, in addition to his travelling expenses, a higher fee than Rs 500 a day for the first three days and Rs 250 a day thereafter, the full daily fee being given for every complete period of 24 hours' absence, with a proportionate fee for periods of less than 24 hours

(2) For similar attendance not involving absence from his head quarters a medical officer may demand or receive fees in accordance with the scale which he has fixed for his patients generally

(3) Before accepting or demanding from a Ruling Chief or Indians of position, as referred to in rule (1), a fee in excess of the rates laid down in rules (1) and (2) above, a medical officer must report the case confidentially to the local administrative medical officer, who will obtain unofficially, and communicate to him, the orders of the local Government. When taking the orders of Government the administrative medical officer will be careful not to disclose any of the medical particulars of the case

(4) Local Governments and administrations shall have full power to dispose of all cases so reported to them, but shall be at liberty to consult the Director-General, Indian Medical Service, or to refer any particular case for the orders of the Government of India

(5) Fees for operations and confinements may be accepted equal in amount to those current in similar circumstances in the profession in the United Kingdom

2 The Home Department Notification No 100, dated the 2nd February 1911, is hereby cancelled"

The change in this Notification is largely verbal, the words in the first paragraph which we have italicised are added, and the new para. 5 practically corresponds to the last four lines of para (2) in the Notification dated 2nd February 1911, No 100. The main point in the new version is that operations can be charged for separately from daily attendance allowance. The previous Notification will be found in *I M G*, March 1911, at p 104

SURGERY AT RANGOON GENERAL HOSPITAL

THE second report of the surgical work done at the General Hospital, Rangoon, is just out. The report deals with the surgery of the year, June 1910 to 1911

In the first portion of the report a very complete illustrated description is given of the fine new General Hospital opened during the year and described in our columns last year (p 221)

The list of surgical operations is a long one, and we notice the following out of 2,172 operations done, *e.g.*, 139 operations for fractures, 30 cases of fracture of the skull, 474 operations on the genito-urinary system, 111 abdominal operations, 305 operations on the eye, 62 general gynæcological operations, and 92 abdominal gynæcological operations. Of operations for malignant growths there were 32, 9 for carcinoma of breast, there were 12 operations for aneurisms and varicose veins; 195 for hydrocele, eversion of the sac being by far the most common method used

Details of many interesting cases of head injury are given, 33 cases in all

Tetanus is common in Rangoon as in all Eastern cities, and the occurrence of pneumonia in such cases is not infrequent

We should direct special attention to the account given of 11 cases of operations for aneurism, 3 being of the abdominal aorta, and one of which is returned as possibly cured

These are of great value as showing the limitations of this formidable operation and the discussion on the operation is worthy of perusal by all surgeons. The list of 15 exploratory laparotomies is very interesting, as is also the list of cases of intestinal obstruction. The discussion on the 4 cases of appendicostomy for chronic bowel trouble is of special value.

The sections on gynaecological operations are admirable and useful, and we would call attention to the admirable series of cases of pelvic suppuration. The details of 12 cases of hysterectomy for myomata are very instructive as is the account of the 15 cases of ovariectomy. As showing how relatively uncommon cataract is in Rangoon, there are recorded only 81 operations for extraction of the lens.

There is much of interest too in the Pathological section, especially on phagedenic ulcers, the police *post-mortem* reports are also of great medico-legal interest, and there is an interesting note on the causes of sudden deaths.

An endeavour is made to differentiate the cases of dysentery into amœbic, bacillary, and ulcerative colitis. The endeavour shows that we still know too little of dysentery to make differential diagnosis which would be acceptable to all, and it only emphasises what we have often said that there is no subject in India more needing special research than the very common complaint dysentery. The note on thirteen cases of lesions of the pancreas is useful.

The whole little book is a valuable record of good work done. In another edition the names of the officers responsible for the various sections might well be given.

Such records as these go far to establish the reputation of a hospital, and we congratulate Major C C Barry and his colleagues on this admirable record of a year's work, which we commend to the attention of all surgeons in India.

THE REPORT OF THE WELLCOME LABORATORIES AT KHARTOUM

The report of the Wellcome Tropical Research Laboratories at the Gordon Memorial College at Khartoum is embodied in a handsome and well-illustrated volume, published by Messrs Baillière, Tindall & Cox. It is a mass of information on many subjects of great interest to workers in the tropics and contains the facts, observations and discoveries made during the last few years by Dr Andrew Balfour and his able staff.

It is impossible in the space at our disposal to deal adequately with the large amount of valuable matter in this volume; we can only mention a few of the articles and subjects dealt with.

Colonel Mathias, D.S.O., writes of sleeping sickness in the Sudan, we need not quote this as the subject of sleeping sickness is much in evi-

dence nowadays. Captain W B Fry writes on animal trypanosomiasis in the Sudan, and Captain L Bousfield on human spirochaetosis, giving cases, and Dr Balfour writes on the spirochaete of Egyptian Relapsing Fever, and he inclines to the view that this spirochaete is identical with the *sp. berbera*, described in North Africa by Seigent and Foley.

A useful and instructive paper by the Director is that on "fallacies and puzzles in blood examination" which may be strongly commended to all young workers on the blood.

As showing the wide spread distribution of Kala-azar, we may refer to Captain Bousfield's report of his enquiries in the Blue Nile Districts. The disease is prevalent and Captain Bousfield notes the following facts—

(1) In 20 cases Kala-azar live bed-bugs were found in eight instances.

(2) Recently deposited eggs of bed-bugs in four other cases.

(3) No sign of either bugs or eggs in four cases.

All the bugs examined were believed to be *Cimex lectularius*, but *C. rotundatus* has recently been found in the Red Sea Province and Lado Districts. It is to be noted that the disease runs a rapid course and that four Englishmen have been reported as having contracted the disease in the Sudan. Other reports on the same subject are also given in this volume. Captain R G Archibald, R.A.M.C., reports on the use of "606" in Kala-azar. It is useful but that is all.

Captain D S B Thomson, R.A.M.C., writes of non-ulcerating "oriental sores" for which is proposed the name of *Leishman Nodules*, and Captain Archibald has an interesting note on a case of parasitic granuloma in which developmental forms of *Leishmania tropica* were present.

Dr Balfour, the Director, has a useful paper on "Fevers in the Sudan" and mentions the following causes of pyrexia, tuberculosis, syphilis, helminth fever, idiopathic tropical splenomegaly, and "fevers of pyogenic origin," and gives details of three cases of uncertain origin.

There are also many useful papers on sanitary works, and in connection with water-supplies. We are glad to see that the epoch-making researches of Major W W Clemesha, I.M.S., on water examination are being imitated and followed up in the Sudan.

We can strongly recommend this valuable volume to our readers and heartily congratulate Dr Andrew Balfour and his staff on its production and on the high standard of scientific work done in the Wellcome Laboratories.

THE STILL MYSTERIOUS BERI BERI

We note that the October number of the *Malaya Medical Journal* by no means is inclined to agree that the last word has been said about the epidemiology or ætiology of "this

mysterious disease," *berri-berri*. The Editor points out the fact that conflicting or rebutting evidence is too often passed over in silence or amply dismissed by adherents of the polished rice theory, *e g*—

"Thus, Dr Braddon in speaking on page 18 of a recent pamphlet, says, 'at every station wherever a group of men was fed on uncured rice—*berri-berri* broke out' This statement is referring to the experimental working parties at Durian Tipus. On page 18 of his report (No 10—1909), however, Dr Fraser has to acknowledge that party No 2 at the 51st mile were kept on white rice for 156 days with no *berri-berri* at all, and it was not until 14 days after they were moved to the 64 mile, that the first case occurred.

One more example, only, of such methods need here be quoted.

Singapore gaol inmates, from time immemorial (certainly from 1878 when the records at our disposal begin) until 1905, were fed on a staple diet of white rice. For twelve years, from 1886 onwards, *berri-berri* gave the gaol a wide berth, and afterwards appeared, rising year by year to a maximum of over 400 cases in 1902. The reason for this awkward immunity is dismissed in 4 lines by Braddon on page 305 of his book 'The Cause and Prevention of *Berri-berri*,' where he states that the appearance of the disease in 1898, was due to reversion to an excessive rice diet which had previously been in low proportion. What he does not mention, however, except in a small print appendix, is—that the excessive rice diet was introduced for nearly three years before *berri-berri* appeared!

Then, again, what about the Singapore prison cases of 1906 occurring on an exclusive diet of parboiled rice? And what is the polyneuritis now present in the same institution, a short report of which will be found in this present issue?

It is not in any spirit of captiousness, however, that we quote these examples out of the many unaccountable phenomena in the epidemiology of this mysterious disease. It is rather with a view to urging a wider outlook for research, and a more honest investigation of conflicting evidence."

The same issue of the *Journal* contains a valuable article by Dr J H F Kohlbrugge, entitled "acidifying and rice bacteria as the cause of polyneuritis gallinarum." It is a remarkable article, and we quote the following conclusions as quoted in the *Malaya Journal* (p 23)

"1 A one sided diet, rich in starch or other carbohydrates, will give an opportunity for the development of fermentation bacteria in the intestine, and thus, the more readily, the more easily fermentable and soluble the starch is (non starchy food is not yet excluded for certain)

By this means the auto sterilization of the intestine is suspended, and the normal flora of the intestine supplanted

2 These micro organisms cause, in a way still unknown but probably not through their fermentation products, a certain group of diseases such as *berri-berri*, scurvy thush, Bilow's disease, cholera nostras, pellagra, etc—diseases, upon the development of which, the seasons and other local factors have much influence

This group I call 'Fermentation Diseases'

3 By their periodicity, these fermentation diseases appear to shew some relationship to what we usually call 'the infectious diseases,' but, otherwise, they differ essentially from them. The similarity is merely caused by the fact that both are due to micro organisms, which, in their effects, always tend to show periodicity

4 Some of these micro organisms belong to a group, a representative of which is the *Bacillus oryzae* (Kohlbrugge, *re*, the an bacillus causing the fermentation of rice, which seems to be cosmopolitan in its distribution

5 This group includes many varieties which are as difficult to distinguish from each other as are those of the vinegar group, with which perhaps they are connected

6 They occur in most kinds of cereals and flour (peas in all), and also in good products prepared from them and preserved in the dry state. But they only seem to have a deleterious effect upon the body under certain conditions, especially for example, when their development in a one sided, acid deficient food is in no way checked

7 The development of these bacilli in the intestine can be inhibited by the exhibition of a dietary which either contains free acid or which can evolve a considerable amount of acid by fermentation, *e g*, rice polishings, katjang hijau, etc

8 These bacteria may have a pathological effect during great local virulence, even though a proper mixed diet be given, and although the food medium of the intestine may not exactly suit them. Their behaviour, in such a case, greatly simulates that of the infectious diseases"

Dr Gilbert E Brooke, the Editor, has also an article on Periodicity in *Berri-berri*, based on statistics from public institutions of the Straits Settlements which is certainly of considerable importance—

"What do we find? For twenty seven of the years to which Table II refers, both the gaol and asylum were on the ordinary white, overmilled Siam rice of commerce

For the first five years, both institutions with their varying conditions of life and different diet schedules, show the presence of *berri-berri*, with the maximum of the curve (in both instances) in the year 1880. Then comes a long quiescent period of about 14 or more years during which both institutions are almost free from the disease

Suddenly, in the year 1896, coincidently with the up to then maximum rise of the disease in Singapore town (*vide* Tan Tock Seng tracing in Table I), an epidemic again begins in the asylum which lasts for about 9 years. The gaol begins, two years later, an epidemic lasting for 8 years

In 1905, parboiled rice was introduced, but the epidemic was obviously then declining, not only inside these two institutions, but also in Singapore (*vide* Tan Tock Seng admissions) so that we cannot tell the exact influence of this dietetic change

It would seem from considerations of all this, that certain conclusions may be drawn—*e g*, that there can be no question of any 'default in respect of some substance of high physiological importance essential for the maintenance of health' The diet scales in force at the gaol and asylum are certainly in excess of physiological requirements even with the inclusion of the most highly polished rice. Even supposing they were not in excess, but just hovering in the balance so that the polishing of the rice would cause a dietetic deficiency sufficient to produce *berri-berri*, this does not explain why the disease should occur for 4 or 5 years and then disappear for 12 or 14, and then reappear, and this, not in one place only, but in two institutions independent of, and far removed from, each other"

These statements cannot be ignored and we hope that they will be carefully investigated by some of the numerous workers at *berri-berri*. Rice is in some way connected with *berri-berri*, but we are in reality only beginning to realise the extent of the food-borne diseases

PHOSPHORUS IN INDIAN FOOD STUFFS

THE connection between the ingredients of food and certain obscure diseases has received much attention of late, and is likely to receive more.

The vexed question of the identity or otherwise of epidemic dropsy and one form of beriberi is not settled, though they have many ætiological features in common.

It will be remembered that Mr D Hooper, FCS, was associated with Major E D W Greig, FMS, in the inquiry into epidemic dropsy in Calcutta, and he has published his examinations of rice and other Indian Food Stuff in the *Journal of the Asiatic Society* (Vol VII, 6, June 11, issued Nov 1911).

This paper is a valuable and interesting one and we make several extracts from it —

When paddy is converted into rice for the market, the chaffy husk is removed by wetting, drying and beating, and the grain that is left is enveloped in a natural layer rich in oil, protein and ash. The rice grain is further prepared or polished by subjecting it once or twice to a milling process which removes the outer layer of nutritious elements and leaves a smooth, white, starchy grain of elegant appearance. The removal of protein, oil and especially the phosphatic ash, reduces the food value of the rice, and renders the grain liable, when used as the sole diet, to induce epidemic dropsy.

The following tables represent the phosphoric value, calculated as phosphoric anhydride, of rices from various provinces. The determinations were made according to the molybdic acid method adopted in agricultural laboratories.

The analyses of husked rice grains before passing through a mill were made on selected samples. These are typical of what are known as unpolished rices —

	Ash	P ₂ O ₅
Calcutta Mill 1	17	80
Calcutta Mill 2	18	58
Rangoon	13	61
Bezwada	12	59
Madras	21	69
Madras, red	16	67
Average	16	65

The next table consists of miscellaneous samples collected in Calcutta, and used in connection with experiments with fowls, or forwarded from districts where beriberi existed —

	Ash	P ₂ O ₅
Bengal, fermented	72	37
Bengal "Bank talsi"	70	33
Calcutta, once milled	10	50
Calcutta, twice milled	10	45
Calcutta, once milled	10	43
Calcutta, twice milled	10	38
Rangoon rice	63	31
Rangoon extracted	65	35
Average	88	36

In the above table it will be observed that the highest phosphorus content is found in the grains only partially milled or polished, where portions of the outer aleurone layer are left. It is invariably the custom in rice mills to subject the grain to a further polishing process in order to remove, as far as possible the whole of the outer layer so as to produce the much appreciated white or table rice.

Separate figures need not be given of a long series of samples of "balam," "atap" and "desi" rices collected by Major Greig from houses in Calcutta where cases of epidemic dropsy had occurred. "Balam" rices on the whole were superior, and contained an average of 0.41 per cent of phosphoric anhydride, while the "Desi"

rices contained a mean of 0.29 per cent. The whole of the series of 35 cases is thus summarized —

	Ash	P ₂ O ₅
Maximum	133	49
Minimum	60	26
Average	90	36.2

Samples of rice used in the Bengal Jails, supplied by the Inspector General, had the following composition —

	Ash	P ₂ O ₅
Arrah, cleaned	80	36
Arrah, uncleaned	106	48
Berhampur, red	86	39
Berhampur, white	113	48
Cuttack	106	44
Jessore	73	25
Midnapore	86	28
Ranchi	100	38
Sambalpur	73	25
Purneah	100	32
Presidency	220	50
Average	103	37

For the sake of comparison, a collection was specially made of samples of rice sold in the Madras Presidency, and these were chemically examined for their phosphoric value.

MADRAS RICES

	Ash	P ₂ O ₅
Sumam, a fine rice	9	39
Berhampur, Ganjam	11	40
Nellore superior	6	27
Nellore, ordinary	8	35
Bezwada, superior	13	47
" inferior	12	49
Tanale, inferior	8	39
Cocanada, superior	7	33
Kalingapatam, superior	7	36
" inferior	9	34
Jagganadam, superior	10	51
" medium	10	44
" inferior	15	49
Dandiwadam, superior	7	30
" medium	16	44
" inferior	22	47
Chingleput, No 1	10	45
" No 2	18	43
Average	11	40

In these samples those which are regarded as superior on account of the fineness and milk-white appearance, and which realize a higher market value, are as a rule comparatively deficient in phosphorus. In Madras a large quantity of rice is imported from Rangoon. It is a coarser rice than the local varieties, and although it is fairly rich in phosphorus, there is a prejudice against its use, and it is consumed chiefly by coolies and emigrants. The rice in which the lowest amount of phosphorus was detected was a sample from Bangalore. It was imported as "Patna" rice from England, where it had been re-milled. The grain was pure white and pearly, but contained only 0.21 per cent of phosphoric anhydride.

As might be expected, rice bran contains the phosphates of rice in a highly concentrated form. With regard to the organic compound containing phosphorus there have been several investigations, but Sozaki, Yoshimura and Takashi have proved (*Bull Coll Agru*, Tokyo 1907, 495-572) that 85 per cent of the phosphorus in the bran of rice is present as phytin. Phytin has been described by Posternak (*Compt rend*, 1903, 136, 1678-80) as a phospho organic acid, $\text{CH}_2\text{O}_5\text{P}$, which differs from phosphoric acid by the elements of formaldehyde. Lecithin, another organic compound found in

seeds by Toplei, Schulze and others, occurs in smaller amount, representing only 1 to 7 per cent of the total phosphorus. Phytin or anhydrous-methylene diphosphoric acid is obtained by treating the powdered substance with 0.2 or 0.3 per cent hydrochloric acid, pressing out the liquor, neutralizing with magnesium and purifying by reprecipitation the calcium magnesium derivative. Another method is to precipitate the acid solution by means of alcohol. Fraser and Stanton (*Lancet*, Dec 17, 1910, 1755) have recently shown that the addition of rice polishings to a diet of white rice is an effective preventive of the development of polyneuritis in fowls. Working in the light of what is known of phytin, they further prove that the substances contained in the polishing which are effective in preventing the disease are not precipitated from the hydrochloric acid solution on the addition of the alcohol, but are retained in the filtrate from the phytin. The essential portion comprises 16 per cent or less by weight of rice polishings, or 1.6 per cent of the original unpolished grain.

Further research will be necessary to determine the nature of the phosphated compound soluble in alcohol which possesses such vital importance in the feeding value of the grain. Rosenheim and Kajiura (*Journ. Physiol.*, 1908, 36—53) state that there is in rice an absence of gliadin or alcohol soluble protein, and glutenin or alcohol insoluble protein, both of which substances are necessary for the formation of gluten. By extracting rice and rice bran with alcohol, I was able to separate phosphoric acid and nitrogen, but in a very small proportion compared with the amount present in the original substances. It has been suggested that the phosphated compound is of the nature of the lipoids found in the brain, spinal column and other animal organs.

Wheat and Flour—Samples of wheat and flour were next examined, to discover what proportion of phosphorus is removed in the process of milling, compared with rice.

Five samples of locally available wheat grains were found to have the following amounts of ash and phosphoric anhydride:

	Ash	P ₂ O ₅
1	2.1	74
2	2.0	80
3	1.7	71
4	1.46	61
5	1.26	59
Average	1.7	69

The agents of one of the largest flour mills in Calcutta supplied me with a series of samples of genuine flour and other products derived from wheat for purposes of analysis. The following grades were examined—

	Ash	P ₂ O ₅
Flour No 1	53	20
" " 2	53	21
" " 3	53	22
Soojee (large)	60	22
" (small)	60	26
Atta B	53	21
" No 2	60	32
" " 4	1.13	59

The last named approaches the composition of the entire grain, and is therefore of greater nourishing value than the flours.

Nine samples of bazaar attas, collected from various houses in Calcutta during Major Greig's enquiry, afforded an average of 0.68 per cent of ash and 0.25 per cent of phosphoric anhydride, showing that they were of the usual composition and not adulterated.

At the Seventh International Congress of Applied Chemistry (London, 1909), F. Vuast read a paper on the composition of wheat, in which he showed that the phosphoric anhydride varied from 0.759 to 0.988

per cent in entire wheat, and from 0.197 to 0.283 in the flour. Sixty six parts are contained in the starch, 13.8 in purified gluten, 2.4 parts in the ether alcohol extract of the gluten, and 17.8 parts in the wash waters. From these figures the average composition of wheat flour in Europe is similar to that of wheat flour in India.

Barley—Three samples of barley (*Hordeum vulgare*) show a considerable difference in the amount of phosphorus they contain according to the degree of husking they have been subjected to—

	Ash	P ₂ O ₅
Unpolished grain	3.4	94
Bulley, husked	1.3	65
Pearl barley	2.9	53

Other instances of the composition of Indian cereal grains are here quoted—

	Ash	P ₂ O ₅
Bajri (<i>Pennisetum typhordeum</i>)	4.5	103
Ditto ditto	2.5	78
Juar (<i>Andropogon Sorghum</i>)	1.2	70
Maui (<i>Eleusine coracana</i>)	3.0	68

Pulse—The pulses constitute a class of food stuffs which are rich in phosphoric acid. Pigeon pea (*Cajanus indicus*), a pulse fed to pigeons, is a healthy diet, and no cases of neuritis have been known to occur when this is habitually given. The Marwaris are in the habit of employing various pulses as mung, besan and dal, and they are generally free from epulemic dropsy when their neighbours, the rice eaters, are attacked. The combination of dal with rice is a convenient means of increasing the phosphates in the diet, and corrects the deficiency, usually found in the polished grain. The following analyses of pulses are recorded:

	Ash	P ₂ O ₅
Arhar (<i>Cajanus indicus</i>)	4.0	86
Besan (<i>Pisum sativum</i>)	3.2	84
Mung or dal (<i>Phaseolus radiatus</i>)	3.2	95
Ditto ditto	4.3	117
Papra (a preparation of dal)	6.5	85
Lentils (<i>Lens esculenta</i>)	2.2	75
Soy (<i>Glycine hispida</i>)	5.0	120
Goa beans (<i>Psoralea tetragyna</i>)	4.2	135

In addition to the pulses, the Marwaris of Calcutta consume large quantities of leguminous and other green pods which are imported from Rajputana for their special use. These beans are of great nutritive value as will be seen from the analyses made on the air dried samples as received—

	Ash	P ₂ O ₅
Kair (<i>Capparis aphylla</i>)	4.2	57
Sangar (<i>Prosopis spiciosa</i>)	4.1	54
Gourpali (<i>Cyamopsis psoraloides</i>)	8.1	76
Motha ka phali (<i>Phaseolus</i> sp.)	5.5	109

With regard to the amount of phosphorus in foods in general two papers have appeared in foreign scientific journals, "The Distribution of Phosphorus in Foods" by M. Balland (*Compt. rend.*, 1906, 143, 969—970), and "The Quantity and Distribution of Phosphorus in some Food Stuffs" by W. Heubner and W. Reeb (*Arch. Exp. Pathol. u. Pharmacol.*, 1908, 265—272). The papers deal with a wide range of articles of European consumption, and the results show that phosphorus is found to be associated with nitrogen in constituting a nutritious or poor food stuff. In all future analyses of dietetic articles it will be desirable to estimate the amount of phosphoric anhydride.

The phosphorus value of Indian food-stuffs, as far as I am aware has not been recorded in any scientific work, and in order to complete this paper several determinations are tabulated for reference. They are classified under animal foods, farinaceous foods, vegetables, nuts

and fruits, and represent articles of diet consumed both by Europeans and Indians

	Ash	P ₂ O ₅
Cheese	50	150
Chicken	13	61
Beef steak	37	56
Cold beef	14	58
Fish boiled	10	49
Fish spiced	20	44
Magoor fish	21	42
Maurola fish	40	56
Prawns	15	58
Potato boiled	16	21
Bread	11	18
Biscuits	8	28
Plantain meal	27	33
Cassava arrowroot	8	06
China almond (<i>Arachis</i>)	27	22
Tea leaves	68	96
" , exhausted	40	70
Pan (<i>Piper Beetle</i>)	20	20

AERIAL CONTAMINATION IN AMOEBIC CULTURES.

CAPTAIN R. T. WELLS, I.M.S., the Joint author of the recent *Scientific Memoir on Dysentery*, has a valuable article in *Parasitology* (Vol. IV, No. 3, October 24th, 1911) on aerial contamination as a fallacy in the study of amoebic infections by cultural methods. It will be remembered that Captain Wells has been on special duty for the study of dysentery in Bombay and at the Central Jail, Hazaribagh, and as one result of this work he publishes this paper, of which the following is a summary —

"1 Amoebæ of at least two different types are, in this part of India at any rate, commonly present in the air, just as are many moulds and bacteria

2 These amoebæ can readily gain access, (1) to specimens of feces, however carefully collected, (ii) to specimens of pus or other material which has, either before or after removal from the body, been exposed to the air, and (iii) to any material after it has been inseminated on Musgrave's medium contained in Petri dishes

These facts indicate yet another source of confusion in dealing with cultures of amoebæ, from feces, in addition to those mentioned by Doflein (1909) as quoted in the Introduction

In view of the confusion which at present obtains in the classification of amoebæ, no attempt is here made to assign the two organisms described to any particular species

However, the morphology and life cycle of these undoubted saprophytes have, at least, enough in common with the features described by a large group of authors as characteristic of true parasites to give rise to serious confusion"

It will be confessed that these facts do not make the study of the amoebæ in intestinal diseases any easier

HEREDITY AND DISEASE

In an address delivered before the Manchester Medical Society (*Medical Chronicle*, Nov 1911), Dr. F. W. Mott, the well-known neurologist of the London County Asylums, treated in an able way the problems of the hereditary trans-

mission of disease. We quote the following extracts —

"By the Law of Anticipation* and by the greater liability of the feeble-minded and insane to suffer from the effects of tubercular infection and alcoholism Nature is continually eliminating poor types. But, admitting this fact, how does it come about that insanity is *apparently* so greatly on the increase? I say *apparently*, for I do not think it really is increasing to the extent that is generally believed. It must be remembered that the standard of sanity has been raised, the treatment of the insane is now most humane and quite different from what it used to be. A large number of people who are insane now live a great number of years in asylums where formerly, owing to dysentery, tuberculosis, and other infective diseases they were killed off. Numbers of imbeciles and idiots who were formerly at large are now segregated. It is probable that as fast as Nature eliminates degenerates new tainted stocks arise. If it be admitted that irritable nervous weakness, neurasthenia may be the starting point of degeneracy of a stock, and there is every reason to believe that this nervous condition may be induced by such factors as syphilis and tuberculosis as well as other infective diseases, alcoholic excess, sexual excess, stress of town life with its feverish pursuit of gain and pleasure, competitive examinations, the constantly increasing departure from the simple modes of life, and the extension of more refined physical and mental enjoyments bringing with them desires and emotions previously unknown, the imposition of celibacy on women, and the unphysiological conditions of sexual life whereby the maternal instinct from which springs all the higher altruistic feelings is staved — then it may be assumed that neurasthenia acquired in a stock may be the starting point of a morbid germinal variation of temperament whereby it becomes a reservoir of degeneracy in its many forms, with cumulative effects in successive generations. Thus the acquired development of the unstable neurotic self-regarding temperament of the neurasthenic of one generation may be the prelude to neurosis and insanity in the next"

THE following is the conclusion arrived at by the Commission appointed by the Academy of Medicine of Paris on the value of antityphoid vaccination, which may be added to the evidence recently produced of its efficacy in India and in the United States Army —

"Our general conclusion is derived from the long series of scientific observations which have accumulated during the last few years. These observations made upon man derive their value both from their number and their result. They are still further fortified by the unanimous indorsements in England, Germany, and the United States, by the highest and most competent medical authority of these nations

This conclusion is as follows. There are grounds for recommending the voluntary employment of antityphoid vaccination as a rational and practical method of diminishing, by a sensible proportion, the frequency and gravity of typhoid fever in France and in the French colonies

This recommendation is addressed to all whose profession, whose usual or accidental methods of alimentation, whose daily or frequent association with the sick or with bacillus carriers, expose them to direct or indirect contagion by the bacillus of typhoid fever. (The conclusion, put to a vote, was adopted)"

* Anticipation or antedating has thus been defined by Nettleship. Anticipation in hereditary disease means the manifestation of the morbid change at an earlier age in each successor, either in members of each succeeding generation as a whole or in successively born children of one parentage

THE 1912 Competitions for the Ambulance Challenge Shields presented for competitions amongst the Railways and Volunteer Corps in India by His Majesty the King-Emperor as Grand Prior of the Order of St John will be held at Lucknow on February 16th

The Competition for the St John Ambulance Brigade Challenge Cup will be held on the day immediately following the Challenge Shields Competitions

The only qualification for competitors in the Shield Competitions is that they must hold the First Aid Certificate of the St John Ambulance Association

Competitors for the Challenge Cup must be members of a recognised Division of the St John Ambulance Brigade

Reviews

Dictionary of Medical Diagnosis—By H. L. McKISACK, M.D., Royal Hospital, Belfast. Baillière, Tindall and Cox, London, 1912. Second Edition. Price, 10s 6d. Pp. xii+590. Illustrations 76.

ONLY four years ago Dr McKisack brought out the first edition of his Medical Diagnosis, and now we have a new edition revised and in many respects amplified and improved. A new and up-to-date account is given of the Wassermann Reaction, and the article by Dr Rankin on Radiography of the Abdomen has been enlarged. Descriptions of many new Diagnostic signs are given, such as Roth's sign, Quinquand's sign in chronic alcoholism, etc. The sections on the pulse and heart affections generally struck us as particularly well done.

There is no doubt the book will prove useful both to students and practitioners, and in India where students are especially weak in diagnosis, the use of such a book in the schools should prove of great advantage.

Manual of the Practice of Medicine.—By A. A. STEVENS, M.D. Ninth Edition, Revised and Illustrated. W. B. Saunders & Co., 1911. \$2.50 net.

SINCE this handsome and valuable little volume appeared in 1893 no less than nine editions have been called for, not to speak of numerous reprintings. Such a volume is beyond criticism. This manual is frankly elementary, but the ninth edition has been largely rewritten, especially in the sections devoted to dysentery, dengue, sleeping sickness, beriberi, Malta fever, plague—to mention only the tropical diseases.

The information given is accurate and up-to-date and clearly expressed.

The volume is elegantly got up, well printed with good use of different type, and with

flexible binding, making it altogether a very pleasant book to read or handle.

It can be strongly recommended to junior students.

Clinical Immunity and Sero Diagnosis—By A. VOLPI EISNER, M.D., Berlin. Translated by RAY W. MATSON, M.D., Oregon, U.S.A. Pp. xiv+184. Price, 7s 6d net. Publishers Messrs. Baillière, Tindall and Cox, Henrietta Street, London, 1911.

THIS is an important work and will be read with pleasure and profit by all those who wish to keep in touch with the advances being made in immunity and sero-diagnosis. The author claims it as the first attempt to establish a connection between immunity on the one hand and general practice on the other. It certainly brings within the bounds of a single small volume, a good deal of the scattered information to be found in original papers and journals, and makes it comparatively easy for the student and practitioner to obtain the more recent information on the very important subjects discussed. The subjects dealt with are Infection and virulence, protective forces of the body, Ehrlich's lateral chain theory, Hyper-sensitiveness, Precipitins, Agglutinins, Opsonins, and Hæmolysis, Wassermann's Reaction, Vaccine-Therapy, Immunisation, and Ehrlich's "606" Salvarsan and its application in human pathology. Certainly a scope large enough for any book. Much useful information will be found under the different headings, and the volume can be heartily recommended from that point of view. We note the author is not inclined to hide his light under a bushel, but it is surely carrying the claims of originality too far to point out that "he was the first" to use the term *dosis lethalis minima* in 1903. The term was certainly in common employment in England years before this date.

Except for this rather jarring method of over-claiming to be the first in the field of discovery, the volume is a pleasing one to read, and as we have already said, one likely to be of great service to the student and teacher.

It is, as might be expected, well produced with clear type and on good paper.

The New Physiology in Surgical and General Practice—By A. RUSSEL SHORT, M.D., F.R.S. John Wright & Sons, Bristol, 1911.

AS the gap between surgery and physiology widens, owing to the rapid march of progress in each field of activity, an urgent need has arisen for a book of this type to bring the latest advances in physiology within easy reach of the clinician. There was a time not so many years ago when it was the proper stance of the true surgeon to try and forget all the knowledge of physiology he had ever attained to, and to belittle the importance of the subject as being of comparatively little service in diagnosis, prognosis, and treatment. Those days are

gone The surgeon at the present time, who wishes to be really up-to-date, must make himself cognisant with the modern advances that have been made in physiology as many of the recent discoveries are fraught with vast possibilities for the surgeon and physician

The present volume may be regarded to some extent as the complement of Langdon Brown's "Physiological Principles in Treatment" Dr Short takes up the new work on the Ductless Gland, on Digestion, the Applied Physiology of Blood-Pressure, Haemorrhagic Diathesis, Uric Acid and Urinary Deposits, Acidosis, Chloroform Poisoning, Nerve Injuries, Surgical Physiology of the Spinal Cord, Cerebral Localization, and Culangous Anaesthesia The different subjects touched on are dealt with in a manner that will make it easy for the busy practitioner to grasp the principles underlying the advances made The subjects are well chosen, and the only criticism we care to make is that, in the next edition, which may be confidently expected before long, the whole scope may be enlarged This is not a type of book that requires recommendation in a review, the mere title should be sufficient to make men keen on their work order a copy at once In this book the clinician will be able to obtain the most recent information, shortly and concisely put and easily read, which hours of reading in original papers would not equal—even when the original papers can be obtained, which is usually a difficult matter

A Text-book of Physiology for Medical Students and Physicians—By W H HOWELL, Ph D, M D, LL D, Professor of Physiology in the Johns Hopkin's Hospital, Baltimore W B Saunders Co, Philadelphia and London, 1911

It is considerably less than two years ago since we had the pleasure of reviewing Howell's splendid Text-book of Physiology In the meantime the demand for it has been so great that a new edition has been rendered necessary, opportunity has been taken to bring all recent advances within the fold, and in this new publication we have a volume which is admirable in every respect A credit to the author and a fine example of the marked skill of the publishers

We have followed with pleasure the advance in popularity of the text-book since it first appeared in 1905, and we have no hesitation in saying that it is a really good text-book for students and for those who take an interest in maintaining their knowledge up-to-date of the advances ever being made in physiology

Heart Sounds and Murmurs, Their Causation and Recognition A Handbook for Students—By E M BROCKBANK, M D F R C P, Senior Physician, Royal Infirmary, Manchester H K Lewis, London, 1911

IN this little pocket-book of 60 pages, the student will find a good deal of useful information put simply and clearly The text is

illustrated with diagrams, showing the characteristics of the murmurs as to time, length and roughness The book may easily be used for clinical reference and should prove of value to the beginners in acquiring the elements of cardiac auscultation Many valuable hints are included in the text, the results of experience, which will assist very considerably in grasping and overcoming some of the difficulties connected with heart diagnoses

Operative Midwifery.—By J M MUNRO KERR, M D, C M, Glasgow, Professor of Midwifery and Diseases of Women, Anderson's College Medical School, Obstetric Physician, Glasgow Maternity Hospital Second Edition Royal 8vo Pages xiv—703 Illustrations 299 Price, 21s. net Bailière, Tindall and Cox

OWING to the short time which has elapsed since the original publication of this work, the author has not found it necessary to make many alterations or additions, and the writer of this notice finds that there is little to add to the very favourable review which appeared in these columns The chapters which have been altered are those dealing with Pubiotomy, Cæsarean Section, Placenta Prævia and Rupture of the Uterus To take the one dealing with Cæsarean Section, the indications are fully discussed, the author considers that neither Symphysiotomy or Pubiotomy come into competition with this operation, but "that they were indicated in the case of a living child when one just failed to effect delivery after one or two attempts with forceps" As regards the choice between Craniotomy and Cæsarean Section when the child is alive and the degree of pelvic deformity so great that the only alternative to abdominal section is Craniotomy, the patient being advanced in labour and having been submitted many examinations, then the author is strongly of opinion that the best interests of the mother and of the state are served by sacrificing the child

If the time of operation can be selected the author's preference is to operate before the onset of labour It is needless to enter into a detailed examination of the various sections, and only necessary to add that the work bears the impress of having been written by a man with a large practical experience, the results of which he has admirably expressed The illustrations are good and the publishers have done their share of the work well

The case of Infants and Young Children—By A DINGWALL FORDYCE, M D Edinburgh E and S Livingstone Price 1s 6d

THESE lectures were originally delivered by Dr Dingwall Fordyce at the Institute of the United Free Presbytery of Edinburgh and published in the hope they will prove useful to mother, nurses and students

We must say that we have read the little book with pleasure The advice is good and the

book is eminently practical. The chapter on the peculiarities of disease in childhood is of especial value and may be read with advantage by all practitioners.

Knoll's Pharmaka —

THIS handsome volume of over 350 pages is devoted to an account of many new drugs brought out by the well-known firm of Knoll & Co., of Ludwigshafen of Rhein. It is written in German (in Roman character) and deals in alphabetical order with anthiasol, aisenferriin, biomural duietin, euresol, fer opyuin, jodival oraraden, ienaden, santyl stypol, tannalbin and some other drugs.

Art of Life—By J. L. CHANDRA, L.M. & S., Calcutta, 1911. Beadon Art Press.

THIS little book is difficult to place. It is apparently intended for the educated public and also the medical man, and is dedicated to Sir Gerald Bomford and Sir R. Havelock Charles. The book is full of interesting extracts, strung together by a very thin thread. The scientific matter will be found too much for the layman, and the popular matter will not greatly interest the physician. We confess we have not been able to find any reason for the existence of this little book.

Aids to Ophthalmology—By N. BISHOP HERMAN. Fifth Edition. Baillière, Tindall & Cox. Price 2s 6d.

THIS is an excellent little handbook for students preparing for an examination. It has now reached its fifth edition and is fully revised and up-to-date. The chapters on refraction have been thoroughly recast, and are now as full and complete as they are concise.

We can thoroughly recommend this little book for use immediately before an examination and as supplementary to other, and more pretentious books on diseases of the eye.

Aids to Histology—By A. GOODALL, London. Baillière, Tindall & Cox, 1912. Price 2s 6d.

THIS little book is intended as a guide to the junior student and for use along with the microscope. We agree that junior students require such aids, as the larger books often contain too much, however valuable they are for more advanced students, we can recommend this little book to students.

SPECIAL ARTICLE

MEDICAL ACTS FOR INDIA

WE reprint herewith a copy of the Medical Bill which has been introduced into the Bombay Legislative Council. We understand that a similar Bengal Bill has been drafted, but the forthcoming somewhat revolutionary administrative changes in the two Bengals have rendered

it impossible to bring in the Bill at present. The great and growing need for such Bills is well known to our readers, and we hope that, after a brief experience of the working of the Bills in the Presidencies of Bombay and Bengal, it will be possible to introduce an All-India Bill.

THE BOMBAY MEDICAL ACT

THE following Bill, together with the Statement of Objects and Reasons accompanying it, is published in accordance with Rule 28 (6) of the Rules for the conduct of business of Meetings of Legislative Council of the Governor of Bombay.

BILL No VI of 1911

An Act for the Registration of Medical Practitioners

Whereas it is expedient to provide for the registration of medical practitioners in the Presidency of Bombay, and whereas the previous sanction of the Governor General required by section 5 of the Indian Council Act, 1892, has been obtained for the passing of this Act it is hereby enacted as follows—

1 (i) This Act may be called the Bombay Medical Act 1911.

(ii) It extends to the whole of the Bombay Presidency.

(iii) In this Act the expression "the Medical Acts" 1858, and any Acts Amending the same.

2 (i) A Council herein referred to as the Medical Council which shall be called "the Bombay Medical Council" shall be established for the Presidency of Bombay.

(ii) The Medical Council shall consist of thirteen members appointed in the following manner, namely—

(a) a President nominated by the Governor in Council,

(b) six members elected by the Governor in Council,

(c) four members elected by the Doctors, Bachelors and Licentiates of Medicine, and the Masters, Bachelors and Licentiates of Surgery of the University of Bombay,

(d) two members elected by the medical practitioners who for the time being are practising in the Bombay Presidency, and are registered under this Act or under the Medical Acts [or, in the case of the first election, are qualified to be registered under this Act], and who are not Graduates in Medicine or Surgery or Licentiates in Medicine or Licentiates in Medicine and Surgery of the University of Bombay.

[i] The first election of members under clauses (c) and (d) of the preceding sub-section shall be held at such times [as soon as may be after the commencement of this Act] and at such place and in such manner as the Governor in Council shall appoint by notification in the *Bombay Government Gazette*, and all elections of members subsequent to such first election shall be held at such time and place and in such manner as the Medical Council shall direct by rules or regulations made from time to time in this behalf.

[iv] No person shall be eligible to be a member of the Medical Council unless he is

(a) a member of the Indian Medical Service, the Royal Army Medical Corps, the Army Medical Staff or the Royal Naval Medical Service and is for the time being serving in the Bombay Presidency, or

(b) a Graduate in Medicine or Surgery or a Licentiate in Medicine or a Licentiate in Medicine and Surgery of the University of Bombay for the time being registered under this Act.

3 [i] The members of the Medical Council shall be chosen and nominated for a term of five years, and shall be capable of reappointment.

[ii] Any member may at any time resign his appointment by letter addressed to the President of the Medical Council.

[m] Upon the death or resignation of any member of the Medical Council, some other person shall be constituted a member of Medical Council in his place in manner hereinafter provided and such person shall hold office for the remainder of the period for which the member in whose place he is appointed was nominated or elected

4 The Medical Council shall hold their first meeting within three months from the commencement of this Act, in such place and at such time as the Governor in Council shall appoint, and shall make such rules and regulations as may be necessary with respect to the times and places of the meeting of the Medical Council, and the mode of summoning the same. In the absence of any rule or regulation as to the summoning of a meeting of the Medical Council it shall be lawful for the President to summon a meeting at such time and place as to him shall seem expedient, by letter addressed to each member and at every meeting, in the absence of the President, some other member, to be chosen from the members present, shall act as President and all acts of Medical Council shall be decided by the votes of the majority of the members present at any meeting, the whole number present not being less than eight, and at all such meetings the President for the time being shall, in addition to his vote as a member of the Medical Council have a casting vote in case of any equality of votes

5 [i] The Medical Council shall appoint a Registrar, and may from time to time grant leave to the Registrar and appoint a person to act in his place. Any order of the Medical Council appointing, granting leave to or dismissing a Registrar or appointing a person to act as Registrar shall be subject to the previous approval of the Governor in Council. The Registrar and any person appointed to act as Registrar shall be paid by the Medical Council such salary and allowances as they may from time to time determine. Any person duly appointed to act as Registrar shall be deemed to be Registrar for all the purposes of this Act

[ii] The Medical Council with the previous approval of the Governor in Council may appoint such other officers or clerks as may be necessary for the purposes of this Act

[iii] The Registrar and any other officer or clerk appointed under this section shall be deemed to be a public servant within the meaning of section 21 of the Indian Penal Code

6 The Registrar shall keep a register of medical practitioners in accordance with the provisions of this Act. The register shall be kept in such form as the Governor in Council from time to time directs. The name, residence and qualifications of every person who is registered under this Act shall be entered in the register with the date on which each qualification was granted. It shall be the duty of the Registrar under the orders of the Medical Council to keep the register correct and from time to time to enter any persons registered, and to enter any additional qualifications which any registered person may have obtained subsequent to his registration and to erase the names of all registered persons who have died provided that the Governor in Council may prescribe a fee for the entry of any additional qualification. To enable the Registrar duly to fulfil the duties imposed upon him it shall be lawful for him to write a letter to any registered person according to his address on the register to enquire whether he has ceased to practice or has changed his residence and if no answer is returned to such letter, within a period of six months from the sending of the letter, it shall be lawful to erase the name of such person from the register provided that the same may be restored by direction of the Medical Council if they think fit to make an order to that effect

7 Every person who (a) is for the time being registered under the Medical Acts, or

(b) subject to the provisions of section 19 is possessed of any of the qualifications described in the schedule to this Act, shall on payment of a fee of fifteen rupees be

entitled to be registered on giving evidence to the satisfaction of the register of this registration under the Medical Acts and the dates of such registration or of this possession of the qualification in respect of which he desiring to be registered, as the case may be. Any person desiring to be registered on the ground that he is registered under the Medical Acts shall also furnish the Registrar with a correct description of the qualifications and give the dates on which they were granted

Provided that the Medical Council may refuse to permit the registration of any person who has been convicted of a cognizable offence as defined in the Code of Criminal Procedure 1898, or who has, in their opinion, been guilty of any grave misconduct or unprofessional act

8 (i) any appeal against the decision of the Registrar respecting a first registration or any subsequent alteration shall be heard and determined by the Medical Council under regulations which shall be made by the Medical Council in this behalf

(ii) Any entry in the register which shall be proved to the satisfaction of the Medical Council to have been fraudulently or incorrectly made may be erased from the register under the orders of the Medical Council

9 The Medical Council may direct that the name of any medical practitioner who has in their opinion been guilty of any grave misconduct or unprofessional act shall be removed from the register and may direct that any name so removed shall be re-entered

10 (1) After the commencement of this Act, the expression "legally qualified medical practitioner," or any words importing a person recognized by law as a medical practitioner or member of the medical profession, shall in all acts of the Governor of Bombay in Council and in all Acts of the Governor-General in Council in their application to the Bombay Presidency, mean a medical practitioner registered either under the Medical Acts or under this Act

(ii) After the commencement of this Act, no certificate required by any Act from any medical practitioner or medical officer shall be valid unless the person signing the same shall have been registered under the Medical Acts or under this Act

11 On the expiry of three months from the commencement of this Act no person shall hold any appointment as a physician, surgeon or other medical officer in any dispensary, hospital, infirmary or living in hospital not supported entirely by voluntary contributions or in any public establishment, body or institution or as a Medical Officer of Health, unless he be registered under the Medical Acts or under this Act

12 Every Registrar of deaths on receiving notice of the death of a medical practitioner registered under this Act shall forthwith transmit by post to the Registrar appointed under this Act a certificate under his own hand of such death with the particulars of time and place of death and may charge the cost of such certificate and transmission as an expense of his office

13 The governing body of authorities of any medical college or school and any examining body appointed to hold an examination in medicine or surgery in the Bombay presidency shall at the request of the Medical Council, furnish such particulars as the Medical Council shall require of any course of study prescribed of examination held by such body or authority or in such school or college with reference to the grant of any members of the Medical Council deputed by the Medical Council in this behalf may attend and be present at any such examination

14 Notwithstanding anything in any other law for the time being in force, every person who shall be registered under this Act shall be exempt, if he so desires from serving on any inquest

15 There shall be paid to the members of the Medical Council such fees of attendance and such reasonable travelling expenses as shall from time to time be allowed by the Medical Council and improved by the Governor in Council

16. All monies received by the Medical Council as fees under this Act shall be applied for the purposes of this Act in accordance with such rules as may be made in this behalf by the Governor in Council.

17. The Registrar shall in every year on or before a date to be fixed by the Medical Council cause to be printed and published a correct list of the names and qualifications of all persons for the time being entered in the register, and the dates when such qualifications were granted, in alphabetical order according to the surnames of the persons registered. Every Court shall presume that any person entered in such list is duly registered under this Act and that any person who is not so entered is not registered.

18. Whoever falsely pretends to be registered under this Act or not being registered under this Act uses in connection with his name or title any words or letters representing that he is so registered shall, whether any person is actually deceived by such pretence or representation or not, be punished on conviction by a Presidency Magistrate of the first class with fine that may extend to three hundred rupees.

19. (i) Subject to the provisions of this Act, the Medical Council may from time to time make rules and regulations generally to carry out the provisions of this Act.

Provided that no rules or regulation made by the Medical Council whether under this or under any of the foregoing sections of this Act shall have any force or effect unless the same have received the previous approval of the Governor in Council.

(ii) All rules and regulation made by the Medical Council under this Act shall, when the same have received the approval of the Governor in Council, be published in the Bombay Government Gazette.

(iii) It shall be lawful for the Governor in Council, by notification in the Bombay Government Gazette, to cancel any rule or regulation made under this Act.

20. If it shall appear to the Governor in Council on the report of the Medical Council or otherwise that the course of study and examination prescribed by any of the colleges or bodies conferring the qualifications described in the Schedule are not such as to secure the possession by persons obtaining such qualification of the requisite knowledge and skill for the efficient practice of their profession, or if it shall appear to the Governor in Council on the report of the Medical Council or otherwise that the course of study and examinations prescribed by any college or body conferring a qualification not entered in the Schedule are such as to secure the possession by person obtaining such qualification of the requisite knowledge and skill for the efficient practice of their profession it shall be lawful for the Governor in Council from time to time by notification in the Bombay Government Gazette to direct that the possession of any qualification entered in the Government Gazette shall not entitle any person to registration under this Act, or to direct that the possession of any qualification not entered in the Schedule shall, subject to the provisions of this Act, entitle a person to be so registered, as the case may be, and the Schedule shall thereupon be deemed for all purpose to be altered accordingly.

21. If at any time it shall appear to the Governor in Council that the Medical Council has failed to exercise any power or perform any duty imposed upon it by this Act, the Governor in Council may notify the particulars in which default has been made to the Medical Council, and if the Medical Council fails to remedy such default within such time as may be fixed by the Governor in Council in this behalf, the Governor in Council may cause all or any of the powers and duties of the Medical Council to be exercised and performed by such agency and for such period as he may think fit.

THE SCHEDULE

1. Doctor, Bachelor and Licentiate of Medicine, and Master, Bachelor and Licentiate of Surgery of the

Universities of Bombay, Calcutta, Madras, Allahabad and Lahore.

2. Any person trained in a Government Medical College or School who holds a diploma or certificate granted by Government declaring him to be qualified to practise Medicine, Surgery and Midwifery, or to be qualified for the duties of a Military Assistant Surgeon, Hospital Assistant or Sub Assistant-Surgeon.

STATEMENT OF OBJECTS AND REASONS

The object of this Bill is to protect the public and the medical profession from irregularly qualified practitioners who have received a training in medical science at unrecognized institutions, and to afford a ready means of ascertaining whether any particular medical practitioner possesses certain scheduled qualifications.

The Bill follows in general outline the English Act (21 and 22 Vict., c 90) without, however, prohibiting in any way the recovery of charges by unregistered persons. While therefore it places no direct restriction upon the practice of Indian vaid and hakim, it will improve the status of qualified medical men—

(Signed) W T MORRISON,

By order of His Excellency the Honourable the Governor

L GRAHAM,

Secretary to the Legislative Council, Bombay
21st August 1911

Correspondence

BICENTENARY OF THE SCHOOL OF PHYSIC OF IRELAND JUNE, 1912

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—We are asked to draw attention to the proposed celebration of the bicentenary of the School of Physic in Ireland. This school, better known now as the Medical School of Trinity College, Dublin University, was founded early in the eighteenth century under the joint control of the University and the King and Queen's College of Physicians. The management of the school has been for some time past practically altogether in the hands of the Universities authorities, but the school still retains its old name and some of its most important professors are appointed by the College of Physicians.

A provisional committee has been appointed to make arrangements for the celebrations to be held at the end of June, 1912, and this committee is most anxious to receive suggestions from graduates who are willing to co-operate. A graduates committee will shortly be formed, and those who are willing to become members are invited to send in their names. The provisional committee is most anxious to receive loans of documents or other objects of interest which may illustrate the history of the school, and will be glad to hear from anyone who may possess such objects. All who are willing to assist are requested to communicate with any of the undersigned.

We are, Sir, yours faithfully,

JAMES LITTLE, M.D. Edin.,
Regius Professor of Physic

CHARLES BALL, Bart.,
Regius Professor of Surgery

A. C. O'SULLIVAN, F.R.C.S.,
University Lecturer in Pathology

W. H. THOMPSON, M.D. R.U.I.,
King's Professor of the Institutes of Medicine

JAMES CRAIG, M.D. Dub.,
King's Professor of the Practice of Medicine

T. PERCY O. KIRKPATRICK, M.D. Dub.

A. FRANCIS DIXON, Sc.D. Dub.
University Professor of Anatomy

November 27th, 1911

SANITATION AT THE VOLUNTEERS' CAMP, DELHI

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your issue for December you quote some remarks of Colonel Forman on latrines and disposal of sewage. The first was "Remove latrines well away from cook houses." One would have thought there was no necessity to insist on such an obvious point as this. Evidently every one does not know it however! In the Mounted Volunteer Camp at the Delhi Durbar the men's latrines were placed immediately behind the cook house. I should say twenty yards would be an over estimation of the intervening space. This arrangement too in a place where flies were one of the "sights." Is it any wonder there were numerous cases of diarrhoea? We were lucky to escape with nothing worse. The camp was well situated with no lack of space, and some one was very much to blame for the arrangement that was made.

Yours, etc.,

K A MURPHY, L.R.S.I.

December 29th, 1911

126 STONES IN THE BLADDER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—I beg to send the following very interesting piece of information, which I hope you will kindly publish in your valuable paper and oblige.

'HUNDRED AND TWENTY SIX STONES IN THE BLADDER'

Karaji Devraj, a tall well built man of eighty years age was admitted in the Civil Hospital, Ahmedabad, on the 4th December 1911, complaining of burning sensation and difficulty of passing urine, which was rather turbid and acid in reaction. Stone in the bladder was suspected and operation was advised which was undertaken a couple of days later.

Major Jackson, M.B., B.Ch., I.M.S., Civil Surgeon, Ahmedabad, who was the operator on the occasion, on sounding the bladder found that there were several stones in the bladder. After the preliminary preparation of washing the bladder, an attempt was made to pass a lithotrite, but difficulty was experienced in introducing it on account of the prostatic enlargement. Perineal section was resolved on and lateral lithotomy was performed. On putting the finger into the bladder, Major Jackson detected several stones and to the great surprise of all standing by 126 stones were extracted, one after the other, as if from a quarry of stones. These stones were light brown in colour of varying sizes, the smallest being that of a millet seed and the largest that of a walnut. The majority of them were faceted and of the size of a marble. There was among them one of the size and shape of a late seed. These were probably Oxalite of limestones formed on nucleus of Uric acid. I do not think any one has read or seen so many stones in the bladder. Out of these hundred and twenty six stones, about 10 broke in the act of extraction.

Yours, etc.,

BAMANJI PESTANJI DARUVALA,

Sub Assistant Surgeon.

A RADICAL CURE OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—With reference to Major Gwyther's paper on the above subject published in the October number of your Journal I should like to note my experience of about 25 cases of hydrocele treated by me by the introduction of sterilized catgut into the sac after tapping.

On account of a change in station the details are unfortunately not available.

The cases were mostly of the kind who dread the open operation and generally resort to the palliative method of tapping.

It is of the utmost importance that the catgut must be absolutely sterile, otherwise the result will be far different from that expected so much so that a colleague of mine gave up the operation as dangerous relying upon the level of the manufacturers that the material was sterilised.

In the mofussil dispensary where a Jellet's alcohol steriliser is a luxury my method consisted of thoroughly saturating the catgut in a solution of T. Iodine and then exposing the same to the fumes of strong H_2SO_4 . The catgut got absolutely sterile by this means and also stiff without curbs and thus easy of introduction into the sac.

Other details are simple and need no repetition.

As for the old standing hydroceles with thick sac the operation did fail in a certain proportion of cases but latterly in a few cases an injection of Acid Trichloroacetic 10 to 15 per cent was tried as a terminal process to the introduction of the catgut. The results were very encouraging.

The injection is a bit painful but there are no untoward after effects such as are noticed after the iodine injection.

In a certain proportion of cases there is a little febrile reaction and slight malaise. I had a mind to give the latter method an extensive trial before giving publicity to the same, but as I am at present posted to a non hydrocele district, I hope that others will improve upon this method and thus save a certain class of sufferers who dread the knife or the anæsthetics.

HALDWANI,

Yours etc.,

DIST NAINI TAL

B D PANDE,

30th October 1911

Asst Surgeon

THE TREATMENT OF GUINEA WORM.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The affection of guinea worm is quite common specially in the maritime towns and localities of India, its intractable nature and painful character are too well known to require any detailed description.

All sorts of local remedies have only a transient effect, none of them acting as a specific and often the disease has to be treated on general principles.

Pot. Permanganas, Chloroform, Hydrag. Perchloride and Ointment also Iodoform have been tried without any specific effect. Internally Santonin, Calomel and other vermifuges have failed to act as such.

It is said that a sugar diet for 24 hours without any other food except water as may be required to quench the thirst often causes a solution of the worm. The sugar is to be taken in 2 ounce doses every third or fourth hour until about a pound has been taken in the course of 12 hours from morning to evening no other food being taken. On the following day, the ordinary diet may be resumed. This sort of treatment is said to act beneficially.

I have quite lately come across a native preparation, viz., aloes, which applied to the spot where the worm has appeared, causes its expulsion in 3 or 4 days.

The fresh tendrils of aloes (Euphorbia) are steeped in an earthen vessel the mouth of which is sealed with mud and the bottom is perforated. The earthen vessel is heated in a heap of cowdung cakes, the juice of the tendrils is gradually delivered in a pot below through the hole in the bottom of the earthen vessel. Extract aloes about one ounce is rubbed up in the juice to the consistency of honey or syrup, and it is applied to the spot where the guinea worm has appeared and about it, it causes the swelling to subside, and the worm is expelled in 3 or 4 days. Hoping this treatment might receive a further trial.

Yours, etc.,

M T H

FOREIGN BODY IN THE THROAT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Doorgiya Dooigya, a female child, aged 1 year, of the Waddai caste, resident of the village Kamarevadi in the Chittapuri Taluq of the Kalgi (Pargol) District in H. H. the Nizam's Dominions, was brought to the Civil dispensary in the morning of the 17th December 1911 at about 10 A.M.

The child was suffering from great dyspnoea and when enquired into, her father said that the child had accidentally swallowed something which had choked her.

The dispensary is about three miles from that village, and it took them one hour to come to the dispensary.

The Hospital Assistant Mahomed Suddudin Khan in charge of the dispensary at once sent for me, I being residing in the same compound.

I saw the child almost asphyxiated. The foreign body to the touch of the finger felt to be hard of a fairly big size and firmly fixed at the upper part of the larynx.

Before the foreign body could be removed, the child to our surprise seemed to expire.

Even then efforts were made and the foreign body was removed by means of a long polypus forceps and efforts were made to restore the child.

I at once commenced with the artificial respiration by means of Sylvester's method, when the Hospital Assistant held out the tongue by means of the same polypus forceps and compounder Syed Abdul Rehman of the Plague Camp was directed by me to perform digital dilatation of the anus and another compounder Lalaji of the dispensary was directed to flicker water on the child's face.

I thank goodness our persisting efforts for about ten minutes were crowned with success and the child breathed again.

After keeping the child for some time till she was quite revived she was presented to her father hale and hearty.

NATURE AND SIZE OF THE FOREIGN BODY

The foreign body removed is an iron nut (bolt and nut) of an hexagonal shape, one and a quarter inch in its longest diameter, $\frac{5}{8}$ of an inch in its thickness and weighing one ounce equal to two ounces in weight

Yours, etc.,

K S D JALNAWALA, L.M. & S.,
Senior Plague Medical Officer,
Plague Detention Camp,
Nadi Jn (G I P Ry)

THERAPEUTIC NOTICES

BOVRIL.

THE Report on the nutritive value of Bovril read before the annual meeting of the British Medical Association is attracting wide attention in the medical profession

The *British Medical Journal* of September 16 devoted some six pages to giving a detailed account of the recent experiments, in which it was shown that in the case of human beings the body building power of Bovril was 'oven more marked' than had been previously shown in the experiments with animals

A further article has just appeared in the *Medical Times*, and the following extracts are of universal interest

The *Medical Times* first points out that the experiments were originally conducted "with the object of ascertaining whether a certain beef extract (Bovril) supplied to the Government had any nutritive value or not. The results were simply startling."

"It was found that in all cases the administration of the extract (Bovril) caused an immediate increase in weight."

Messrs Newton, Chambers & Co, Ltd (Thornclyffe near Sheffield), ask us to state that they will gladly send their series of handbooks on disinfection to readers of this journal on receipt of a postcard. *Medical Izal* contains reprints from the principal medical journals of papers dealing with the use of Izal in the treatment of phthisis, puerperal sepsis, tropical dysentery, enteric fever, cholera, and tinea favosa capitis. "Practical Disinfection" deals with the domestic uses of Izal. "The Veterinary Handbook" is full of useful information for owners of horses, dogs, cats, poultry, etc. The last of the series, "Izal in the Dory," apart from its purpose as an advertisement is a really useful handbook at a time when the conditions of milk production are claiming so much attention

Service Notes

I M S DINNER AT CALCUTTA

ONE of the most successful of I M S dinners took place at the United Service Club, Calcutta, on 13th January 1912. It was hoped to have held the dinner during the busy week of the King Emperor's visit, but as the desired presence of Sir Haydock Charles K C V O (I M S ret) Sergeant Surgeon to the King, could not be obtained the latter day was fixed.

The following officers were present under the Chairmanship of Colonel G F A Harris, I M S, C S I, I R C P, viz—

Lt Col F J Drury, Principal, Medical College Calcutta
Lt Col H Pilgrim, Surgeon Superintendent, Presidency General Hospital
Lt Col Green, Professor of Midwifery, Surgeon to Eden Hospital
Lt Col E P Maynard, Prof of Ophthalmology, Surgeon to Mayo Hospital
Lt Col A H Natt, Civil Surgeon, Howrah
Lt Col W J Buchanan, Inspector General of Prisons, Bengal
Lt Col I F O'Keefe, Surgeon to H E the Viceroy
Lt Col R Bird, Professor of Surgery
Lt Col Deane, Civil Surgeon, Darjeeling
Major Mulvaney
Major Grange
Major L Rogers
Major Newman
Major D McCay
Major Watous
Major F C S Thompson
Major Maddox
Major Bourke
Major Hayward

Major Gage
Major G King
Major E O Thurston
Capt Moses
Capt W G Hamilton
Capt W H Hamilton
Capt Tastei
Capt Power Connor
Capt Steen
Capt A Denham White
Capt Proctor
Capt Macworth
Capt Dutton
Capt Salisbury
Capt Napier
Lt Norman
Lt Bruncha

Col G F A Harris was in the chair. The Director General Sir Pardy Lukis, K C S I, was to have been the principal guest but he had to go off to Delhi on urgent business. The other guests were Surgeon General Sloggett C B (M C, A M S), the newly appointed P M O in India, Surgeon General Corke A M S, the recently appointed P M O 5th (Lucknow) Division, and Fleet Surgeon Sutton who represented the Royal Navy. After dinner Colonel Harris rose and said that though he was not a Mason he understood that at such meetings as these there were what the Masons called "tokens of obligation," and these were the King Emperor, Prosperity to the Service and the Guests. The first toast having been enthusiastically responded to Colonel Harris went on to propose the toast of 'Prosperity to the Indian Medical Service.' He began by voicing the general regret that Sir Pardy Lukis was unable to be present owing to his having gone to Delhi to advise as the sanitary defects of the newly selected capital of India.

Colonel Harris went on to say—

"I am sure you will all regret and myself particularly, that Sir Pardy Lukis is not here to give you one of those stirring after dinner speeches of which he is such a past master and to which we were all looking forward to eagerly. You will also agree with me in cordially congratulating him on the honour done him by the King in making him a K C S I. To reach a similar decoration we have to go back to the days of Sir Joseph Fryer, about 40 years ago who received it after the visit of the late King Edward VII to India as Prince of Wales. I have also to congratulate the other recipients of the honours recently conferred at the Coronation Dinner and in connection with the King's visit.

"It is now my pleasing duty to ask you and the distinguished members of the Naval and Military Medical Services present to join in drinking the toast of prosperity to the I M S, and that it may continue to prosper and flourish in the future as in the past.

"Brother officers of the I M S we have met together this night to testify that we are a corporate, distinctive and united body. Corporate and distinctive in the sense that we are all members of a common medical service with a history and traditions second to no other medical service in the world, united in the sense that our common interests join and bind us closely together. While saying this I am fully aware that a few have trusted us by saying that we are *trusting in esprit de corps*, which should certainly exist in all services, and which, for example, exists in the R A M Corps and in the Royal Navy Medical Service, and which has undoubtedly been of the greatest help to the sister services in raising them to the position they now occupy. Brother officers I am not one who believes in any want of *esprit de corps* in our service, it may be that we do not meet each other as often as should be, but you all know that except in the Presidency Towns our men are widely scattered in medical charge of large districts and areas, and for months at a time it may well be that such officers never meet a brother officer except at times of transfer or when inspected by the head of a department. Hence the great value and importance of such service dinners as this and the annual dinner of the I M S in London. I am all in favour of such meetings, for united we stand and divided we fall. The more such meetings and the more members of the service attend them, the more this very desire to *esprit de corps* will be fostered and developed. I have always and will always be glad to give the necessary leave to officers to attend such gatherings and the Lieutenant Governors of two Provinces in which I have served Sir John Hewitt and Sir Wm Duke has both assured me that they will always give such leave freely.

"It is customary also at such meetings as this and in connection with this particular toast to say something of the important changes or improvements which have taken place in the service during the past year or so—to take stock as it were of our position and of the existing situation. I can only regret that Sir Pardy Lukis is not here to do this part of the work for me.

"I am not a pessimist as to the I M S. I have no sympathy with the Creakers who go round and say the 'service has done its work,' 'has outlived its usefulness' and should make

way for an independent medical profession. I do not believe this and I do not believe it would be for the good of the peoples of India if it were so, as a matter of fact I can reply to the Croakers that so far from the I M S offering smaller career to the young medical man than formerly, it may surprise you when I tell you that in the last 20 years the number of I M S appointments has distinctly increased. In 1890 there were a total of 632 officers, we have now 726, the number of Civil Surgeons in 1890 was 172, it is now 161, or eleven less, but this is counterbalanced by the fact that the whole time professorships have increased from 23 to 34 an increase of 11 appointments."

Colonel Harris then enumerated the important changes in the service of recent years, for which we have to thank the Director General, we need only briefly mention them here as we have dealt with them recently editorially—they are the big fee case settled and the importance of the more recent orders on this subject is that the fee for the operation, if there is such, is separate and distinct from the daily fee for attendance—a distinction of some importance to consulting surgeons.

Other changes were referred to by Col Harris, *eg.*, the new scale of graded pensions, the extension of the period for qualifying for accelerated promotion, the brevet promotions which, however, has been but sparingly given so far, and which Col Harris hoped would become more frequent. He alluded to the knighthood to Sir Charles Bedford (and hoped that more such will come to the I M S) and to the new regulation for appointing Kings Honorary Physicians and Surgeons from the active list.

Col Harris next referred to the leave difficulty and to the fact that long combined and study leave has had the unintended effect of making leave more difficult to get, and emphasised the fact that the percentage of the leave reserve must be raised if men are to get the leave expected and very often badly needed.

It was also satisfactory, he said, to hear from Sir Arthur Brinfoot at the India Office that the recruitment for the service is improving, and that the last two batches have been especially good.

In conclusion Col Harris referred to the grant of a K C S I to Sir F. Trevor, late P M O in India and the C S I to Lt Col Aldridge which removes a grievance of the sister service that they never get Indian Honours.

He also referred feelingly to the necessity for an *entente cordiale* between the I M S and the R A M C, a matter which Surgeon General Sloggett in reply to the toast of the health of the guests also took up and emphasised the need for Surgeon General Sloggett said it was a matter he had always, and would always, insist on, and he appealed to the I M S men in military employ to look on him as equally the head of the military branch of the I M S and of the R A M C.

Surgeon General Corke and Fleet Surgeon Sutton also suitably replied to the toast of their health.

Altogether it was a most successful reunion of the I M S, and the opinion was freely expressed that more such dinners are needed and that this event in Calcutta should be an annual one.

Letters of apology for absence were read from Lieutenant Colonel Calvert and Major Cecil Stevens, who had been suddenly called away on professional duty up country.

Lieutenant Colonel Dwyer proposed the health of Colonel Harris and congratulated him on the receipt of his C S I.

Lieutenant Colonel Pilgrim proposed a vote of thanks to Major Stevens and Major Newman, the Secretaries of the dinner, to which Major Newman replied.

THE following comment will further emphasise Colonel Harris' remarks. Looking back at the growth of the I M S since 1890, a period of only 22 years, one cannot but be struck at the steady increase, there has been in the establishment in every department of the service. In those days the I M S was made up of three quite independent services belonging to the three Presidential areas of Bengal, Madras and Bombay, and the total strength of these including appointments of all sorts, military and civil, was 361 in Bengal, 155 in Madras and 116 in Bombay, or 632 in all. The Presidential system has disappeared except in the case of officers whose commissions are dated prior to 28th January 1897, so it is impossible to give corresponding figures for the service at present. Taking the I M S as a whole, however, we find there are 199 appointments under the Commander in Chief and 6 under the Army Department, with a leave reserve of 41, or 246 military appointments, in civil employment there are 379, including 20 special plague officers, with a leave reserve of 75 and in addition there are 26 "special war reserve" officers employed in peace time in non cadre appointments either on the military or civil side. This makes a total of 726 as compared with 632 in the year 1890. But, in addition to the above there are certain seconded appointments, not reserved for the I M S, composing the Bacteriological Department, at present the number of these is 11, and the total is really 737. In the last twenty two years, then the

number of I M S officers has increased by 105, a fact which is very generally overlooked.

Turning to the distribution of officers, we find that, whereas in 1890 there were 283 in military employment, the corresponding number now is 246, excluding the "Special war reserve," of which at least a half will at any one time be found in civil employ, even adding 13 of these officers to the 246 cadre military appointments we only get 259 so that there has been a notable decrease in this branch of the service. On the other hand the number in civil employ has risen from 349 to 454, or, including half the "Special war reserve" and the Bacteriological Department, to 478.

The number of administrative appointments carrying the rank of Surgeon General or Deputy Surgeon General was, as at present, 20, of these 12 were in military employ.

On the military side the number of Secretaries has been reduced from three to one since the amalgamation of the three Presidential armies, and there are only four whole time medical store keepers since the abolition of the Allahabad Depot. The appointment of medical accounts examiner has been abolished. On the other hand, there are now five staff officers of medical mobilisation stores attached to divisions. Since 1891 too the system of recognising "specialist" officers has come in.

On the civil side the two assistants to opium agents have gone. The assay department will in future not draw its assay masters from the I M S, and certain appointments such as the curator of the Herbarium Calcutta and the Protector of Emigrants are no longer cadre ones. But in other directions the service has gained. In 1899 there were three Inspector Generals of Prisons and ten Superintendents of Central Prisons, the administration of jails has gradually passed over to the I M S, and there are now eight Inspector Generals and 32 Superintendents. The number of Central Asylum appointments has risen from two to six, and there are five Chemical Examiners instead of four. In the Sanitary Department there were six Sanitary Commissioners, including the officer who combined the sanitary and civil medical administration of Burma, and 13 deputies. There are now eight Sanitary Commissioners and 14 deputies. Again, the Foreign Departments had 24 permanent appointments (excluding the military ones in corps under the Government of India), whereas there are now 36. As regards ordinary civil surgeons the number has fallen from 171 to 162. On the other hand there are now 34 whole time professorships, as against 23. Deputations in connexion with research are frequent nowadays, and occupy several officers outside the bacteriological department.

On the whole it is obvious that the I M S offers a far more varied field of employment now than it did 22 years ago.

LIEUTENANT COLONEL R. BIRD, C.I.E., F.R.C.S., I.M.S., who has been on the staff of the King Emperor during the visit of their Imperial Majesties has been awarded the M.V.O., 4th Class. Lieutenant Colonel Bird, it will be remembered, gained the higher order, C.I.E., for his visit to Kabul to attend professionally on the Amn of Afghanistan.

JUST before Their Majesties held their Court at Government House, Calcutta, Major Leonard Rogers F.R.C.P., F.R.C.S., M.D. (London), I.M.S., was invested with the C.I.E. granted him in the Durbur Honour List.

THE following account of the prize distribution at the Medical Staff College in London shows that the new batch of I M S officers are worthily holding up the superiority of the service in the final examinations.

The usual half yearly distribution of prizes to the Lieutenants on probation, Royal Army Medical Corps and Indian Medical Service took place in the theatre of the College, at 4 P.M., on October 25.

There was a large attendance of guests, including several distinguished members of the civilian medical profession, many past and present officers of the Royal Army Medical Corps and the friends of the Lieutenants on probation.

A very satisfactory report on the work of the past session was read by the Commandant and Director of Studies Colonel E. J. L. Rish, who then called upon General Sir Charles Egerton, G.C.B., D.S.O., to give away the prizes.

General Sir Charles Egerton, in an interesting speech referred to his experiences in India more than forty years ago, and, while paying a high tribute to the zeal and devotion of the medical officers of those days, dwelt on the enormous progress which had since been brought about in the health and efficiency of our army in India, which he attributed almost entirely to the untiring efforts of the Army Medical Service. He congratulated the young officers who were entering on a military career, and pointed out to them the enormous scope they would have for using their professional attainments to the best advantage.

A vote of thanks to Sir Charles Egeiton, proposed by Surgeon General Babbie V.C., C.M.G., and seconded by Lieutenant Colonel Sir William Leishman, F.R.S., was heartily received.

At the conclusion of the prize distribution Colonel Risk and the officers Royal Army Medical Corps, London, were 'At Home' in the mess.

NAMES OF PRIZE WINNERS—19TH SESSION

Lieutenant E. R. Armstrong, I.M.S. Parkes Memorial, 1st Hygiene, Bronze Medal.

Lieutenant E. R. Armstrong, I.M.S. Fayet Memorial, Pathology, Bronze Medal and Book.

Lieutenant H. G. Monteith R.A.M.C. 2nd Montefiore, 2nd Military Surgery, cheque £7.

Lieutenant E. R. Armstrong, I.M.S. Ronald Martin, Tropical Medicine, Gold Medal.

Lieutenant E. R. Armstrong, I.M.S. 1st Montefiore, 1st Military Surgery Bronze Medal, and cheque £21.

Lieutenant B. H. H. Spence, R.A.M.C. De Chamont, 2nd Hygiene Books bound (three).

Lieutenant E. R. Armstrong, I.M.S. Marshall Webb, Military Medical Administration, Bronze Medal, and Cheque £5.

Lieutenant E. S. Callirop, R.A.M.C., Talloch Memorial, Pathology, Silver Medal.

Lieutenant E. R. Armstrong, I.M.S., Herbert, Highest aggregate cheque about £20.

COLONEL WILLIAM PLFSE WARBURTON, Bengal Medical Service, retired, died at Lowestoft on 18th October 1911. He was born on 17th August 1813, a native of Prince Edward Island now part of the Dominion of Canada, but up to 1867 a separate colony, and was educated at Prince of Wales' College, Charlotte town in that island, and at Edinburgh University, where he took the degrees of M.B.C.M. in 1865, and the M.D. in 1885. He entered the I.M.S. as Assistant Surgeon on 31st March 1866, became Surgeon on 1st July 1873, Surgeon Major on 31st March 1878, Brigade Surgeon on 1st April 1891, Surgeon Colonel on 9th January 1894, and retired on 9th January 1899. Most of his service was spent in civil employ in the Punjab, where he was for some years Superintendent of the Lahore Jail, and for twenty years, from 1871 to 1894, Medical Officer to the Maharaja of Kapurthala. On promotion he was appointed Military P.M.O. and I.G. of Hospitals in Assam, but in the following year 1895 was transferred to the N.W.P., now the United Provinces, where he was a very popular Inspector General. He received the C.S.I. on 9th January 1899. Soon after his retirement, he succeeded the late Surgeon Major General Lithgow A.M.D. in December 1899 as Superintendent of Edinburgh Infirmary, where he put in nearly twelve years as a popular and efficient administrative head, retiring on 31st July 1911, less than three months before his death when Sir Jos. ph. Fayet, Bart., succeeded him. The Army List assigns him no war service. Colonel Warburton's youngest brother, George Arthur Warburton, also served for some years in the I.M.S. from 31st March 1875 till 20th June 1883, when he resigned. Most of his service was spent in civil employ in Assam.

BRIGADE SURGEON ALEXANDER DUGALD CAMPBELL, Bengal Medical Service, retired, died in Kensington on 8th October 1911. He was born on 19th June 1833, educated at Edinburgh University, where he took the M.D. in 1857, and entered the I.M.S. as Assistant Surgeon on 27th January 1858, becoming Surgeon on 27th January 1870, Surgeon Major on 1st July 1873 and retiring with an honorary step on 20th October 1881. The Army List assigns him no war service.

CAPTAIN GEORGE SNIDER NICKERSON, R.A.M.C. retired, died on 14th October 1911, at Senna, on the Blue Nile from the effects of a fall from his horse. He took the degrees of M.B., Ch.B., Victoria, in 1896 and entered the R.A.M.C. as Lieutenant on 27th July 1892 becoming Captain three years later. He served in the Nile Expedition of 1898, and was present at the battle of Omdurman, being mentioned in despatches and receiving the medal with two clasps. In the following year he was seconded for service with the Egyptian Army. After completing ten years' service with that army instead of rejoining the R.A.M.C. he retired from 20th January 1909, and remained in the Egyptian army in which he had risen to the rank of Colonel, at the time of his death and held the important post of Governor of the Sennar province of the Sudan. He received the fourth class of the Osmanieh Order in 1907. He was a brother of Major W. H. S. Nickerson V.C. R.A.M.C.

LIEUTENANT COLONEL CHARLES NORMAN BENSLEY, of the Bengal Medical Service, retired on 12th November 1911. He was born on 20th October 1863, educated at Edinburgh, where he took the degrees of M.B., C.M., in 1885, and entered the I.M.S. as Surgeon on 30th September 1886 becoming Major on 30th September 1898, and Lieutenant-Colonel on 30th September 1906. He was serving in the 9th (Sikanderabad) Division, but had been on furlough for the

last twenty months. The Army List assigns him no war service.

DEPUTY SURGEON GENERAL CHARLES KILWAY COLSTON, Bombay Medical Service, retired, died on 21st September 1911. He was born on 5th October 1842, and entered the I.M.S. as Assistant Surgeon on 20th February 1866 becoming Surgeon on 20th February 1868, Surgeon Major on 1st July 1873 and Brigade Surgeon on 27th November 1879 retiring with a step of honorary rank on 15th September 1886. The Army List assigns him no war service.

SURGEON MAJOR JOHN RABY, Bombay Medical Service, retired, died at Paignton, Devon, on 22nd September 1911. He was educated at St Thomas took the M.R.C.S. and the L.R.C.S. and L.R.C.P., Edinburgh, in 1865 and entered the I.M.S. as Assistant Surgeon on 1st March 1866, becoming Surgeon on 1st July 1873 and Surgeon on 31st March 1878. He retired in the following year on 18th June 1879. The Army List assigns him no war service.

LIEUTENANT COLONEL ERNEST GERALD ROBERT WHITCOMB, of the Bombay Medical Service, retired on 27th October 1911. He was born on 31st May 1866 took the L.R.C.S. and L.R.C.P. Ed and L.F.P.S.G. in 1888, and entered the I.M.S. as Surgeon Captain on 31st January 1891, becoming Major on 31st January 1903, and Lieutenant-Colonel on 31st January 1911. He served in Mekran in 1898, and was present at the action of Gok Paoosh, and was mentioned in despatches, also in China in 1900, at the relief of Pekin, receiving the medal and clasp.

MAJOR WILLIAM WILFRID WEBB, Bengal Medical Service, retired, died at Exeter on 15th October 1911. He was born on 28th November 1857, educated at Aberdeen University and Charing Cross Hospital and took the diplomas of L.S.A. in 1878, M.R.C.S. in 1880, and the degrees of M.B., C.M., with honours at Aberdeen in 1881, subsequently taking the M.D. in 1894. He entered the I.M.S. as Surgeon on 30th September 1882 and ten years later was placed on temporary half pay on 22nd August 1892, retiring on 22nd August 1894. On 1st March 1893 he was appointed Secretary to the Army Medical School at Netley, and held that post till the school was abolished, on 1st May 1905. He was granted the honorary rank of Major from 20th June 1901. The whole of his service was spent in Rajputana, he had seen no war service. He was the author of *A Manual of Vaccination in Hind*, 1886, *Jail Manual of Bikaner State* 1888, *The Indian Medical Service a guide for intended candidates for commissions and for the junior officers of the service*, 1890 and *The Currencies of the Hindu States of Rajputana* 1893. He also contributed no less than thirty eight memoirs, chiefly of medical men, to the later volumes of the *Dictionary of National Biography*. The best known men whose lives he thus wrote are Surgeon Major T. H. Parke, Stanley's companion in his journey through Central Africa to relieve Emin Pasha, A. S. Taylor, author of the well known work on medical jurisprudence, Sir George Burrows, Dr George Hailey, and Sir George Johnson.

MAJOR R. P. WILSON, I.M.S., Officiating Civil Surgeon of Cuttack is allowed privilege leave combined with furlough for fifteen months viz privilege leave for three months under Article 260 of the Civil Service Regulations, and furlough for the remaining period under Article 308 (b) of the Regulations with effect from the date on which he may have availed himself of it.

CAPTAIN D. MUNRO, I.M.S., has been granted by His Majesty's Secretary of State for India an extension of leave for three months.

SECOND CLASS MILITARY ASSISTANT SURGEON J. D. THOMAS, Medical Officer, Eastern Bengal State Railway Damukdia, is allowed combined leave for one year viz, privilege leave for three months under Articles 233, 250, 260 and 606 of the Civil Service Regulations and furlough for the remaining period under paragraph 435 (b) Army Regulations, India, Vol. I, with effect from the 1st November 1911.

THE services of Captain A. W. Howlett M.B., I.M.S., are placed temporarily at the disposal of the Government of the United Provinces for employment in the Jail Department.

AT an examination held at Bhamo on the 30th October 1911, Lieutenant Colonel K. Prasad, I.M.S., Civil Surgeon Bhamo, passed the prescribed test in the Shan language by the lower standard.

Lieutenant-Colonel Prasad is entitled to receive a reward of Rs 1,000.

THE following promotions are made, subject to His Majesty's approval —

Captains to be Majors, I M S

27th July 1911

Francis Victor Owen Bett, M B
Mathew Corry, M D

Lieutenants to be Captains, I M S

1st August 1911

Reginald Broughton Lloyd, M B
Archibald Campbell Munro, M B
Ram Nath Chopra, M B
Alfred Geddes Tiesidder, M B
Gordon Gray Jolly, M B
Hugh Stott, M B
Alister Argyll Campbell McNeill, M B
Robert Long Gamlen, M B
Abdus Sattar Khan
George Frederick Graham, M B
Maneck Dhanujshaw Wadia
Taylor David Munson
Sohrab Shapoorji Vazifdar
John Joseph Harper Nelson, M B
Edward Selby Phipson, M B
Fleet Floyd Strother Smith, M B
Arthur Jessop Symes, M B
Gerald Lewis Colhoun Little, M B
Thomas Crawford Boyd

(Army Department Notification No 813, dated the 29th September 1911, is hereby cancelled)

IN supersession of this Department Notification No 2028—Sanitary, dated the 26th October 1911 Captain A G McKendrick, M B, I M S, is appointed to be Statistical Officer to the Government of India in the Sanitary and Medical Departments, substantively *pro tempore*, with effect from the 23rd October 1911 and until further orders

CAPTAIN J A CRUICKSHANK, M B, I M S, is appointed to the Bacteriological Department, substantively *pro tempore* with effect from the 23rd October 1911 and until further orders

THE services of Lieutenant Colonel J Crummin, V C, C I E, I M S, officiating Principal Medical Officer, Kohat Brigade, are replaced at the disposal of the Government of Bombay with effect from the 17th November 1911

MAJOR G B RIDDICK R A M C is appointed to hold collateral charge of the Civil Surgeoncy at Mysore in place of Major C R Pevree, I M S, until the return of Lieutenant Colonel A O Evans, I M S, from military duty

LIEUTENANT COLONEL G J H BELL, I M S, Inspector General of Prisons Burma, was appointed to officiate as Inspector General of Civil Hospitals, Burma in addition to his own duties during the absence on leave of Colonel H St. C Carruthers, I M S

General Department Notification No 286, dated the 9th September 1911 is hereby cancelled

At an examination held at Khatat on the 8th November 1911, First Class Military Assistant Surgeon W L Brookes, Civil Surgeon, Upper Chinaman District, passed the prescribed test in the Manipuri language

Mr Brookes is entitled to receive a reward of Rs 1,000

THE following appointments to the new Medical College, Lucknow, are gazetted with effect from the 4th October 1911—Babu Raghunandan Lal, M B, B S, to be Civil Assistant Surgeon, 3rd grade, and to be Junior Demonstrator of Physiology at the Lucknow Medical College

Consequent on the appointment of Major W Selby, I M S, and Captain C A Spry, I M S, as Principal and Professor of Physiology, respectively at the Lucknow Medical College the following Civil Assistant Surgeons are appointed as Civil Surgeon—

1, Senior grade Civil Assistant-Surgeon Gobind Narayan Das
2 Senior grade Civil Assistant Surgeon Rai Ranjit Singh Sam Bahadur

Consequent on the appointment of Civil Assistant Surgeon Tasaddug Hnsam to the Lucknow Medical College, Babu Chandra Chandra Mitra to be Civil Assistant Surgeon, 3rd grade

Consequent on the confirmation of Civil Assistant-Surgeon Gauri Nath Babu Amar Nath Raj Chaudhri to be Civil Assistant Surgeon 3rd grade, sub *pro tem*

Consequent on the confirmation of M Ghulam Murtaza and M Manji Ram as Civil Assistant-Surgeons, 3rd grade and the deputation of Civil Assistant Surgeons J G Mukharji and Ram Chandra Lal to malaria duty, Babu Jyotish

Chandra Ray Chaudhuri and Babu Sham Lal to be temporary Assistant Surgeons with effect from the date on which they assume charge of their duties

Consequent on the deputation of Civil Assistant-Surgeons, Ghulam Murtaza and Manji Ram on plague duty, Babu Sobha Ram and Pandit B C Pant to be temporary Civil Assistant Surgeons, with effect from the dates they assume charge of their duties

HIS Excellency the Governor of Bombay in Council is pleased to cancel Government Notification No 6686 dated the 14th November 1911, and to appoint Captain B Higham, M B, B S (Lond), I M S on relief, to act as Deputy Sanitary Commissioner, Central Registration District, pending further orders.

MAJOR G E STEWART, M B, I M S, Superintendent of Mahableshwar in the district of Satara is appointed, under section 12 of the Code of Criminal Procedure, 1898, to be a Magistrate of the Second Class in that district and is invested with the following additional powers, being some of the powers specified in the fourth schedule to the said Code—

Power to make orders prohibiting repetitions of nuisances (section 143)

Power to make orders under section 144

Power to hold inquest (section 174)

Power to take cognizance of offences upon complaint and upon police reports (section 190 (1) (a and b))

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments, *vice* Dr S A Powell, V B, M Ch on leave, pending further orders—

Mr Barjor Phirozshah Karani, L M & S, to act as Professor of Biology Grant Medical College

Assistant Surgeon Bhikharji Kdahi Ghaswala L M & S, to act as Professor of Medical Jurisprudence, Grant Medical College, in addition to his own duties, *vice* Major E F G Tucker, M B, B S, M R C P (Lond), I M S

HIS Excellency the Governor of Bombay in Council is pleased to appoint Captain H S Hutchison, M B, I M S, to act as Deputy Sanitary Commissioner for the Sind Registration District during the absence on leave of Major W O S Murphy, M B, B Ch, (R U I), D P H, I M S, or pending further orders

MISS A T MACMILLAN, M B, B Ch, is appointed to act as First Physician, Pestani Hormasji Cama Hospital for Women and Children, Bombay, during the absence on leave of Miss A M Benson, M D, or pending further orders

MAJOR W O S MURPHY, M B, B Ch, I M S, has been granted privilege leave of absence for twenty two days with effect from the 1st December 1911 with permission to affix to his leave the Christmas Holidays from the 23rd idem

HIS Excellency the Governor in Council is pleased to notify that Major E F G Tucker, M B, B S, M R C P (Lond), I M S has been appointed to act as Professor of Medical Jurisprudence, Grant Medical College in addition to his own duties, from date of departure of Dr S A Powell, M B, M Ch, pending relief

MAJOR C E WILLIAMS, I M S, Sanitary Commissioner, Burma, was on study leave from the 1st February 1911 to the 28th July 1911

CAPTAIN H A WILLIAMS I M S, was granted by His Majesty's Secretary of State for India study leave from the 9th April 1911 to the 9th October 1911

UNDER the provisions of Articles 206, 308 (b) and 233 of the Civil Service Regulations, privilege leave to the extent due, combined with furlough so as to make up a total period of one year is granted to Lieutenant Colonel Kanta Prasad, I M S, Civil Surgeon, Bhama, on account of ill health, with effect from the 23rd November 1911, before noon

CAPTAIN B B PAYMASTER, I M S, is granted from the 1st January 1912 or the subsequent date on which he may avail himself of it such privilege leave of absence as may be due to him on that date and six months' study leave, in combination with furlough for such period as may bring the combined period of absence up to two years

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments pending further orders—

CAPTAIN W M HOUSTON, M B, B Ch (DUB), I M S, on return from leave, to act as Medical Officer Kathiawar Political Agency, and in charge West Hospital, Rajkot.

CAPTAIN W D A KEYS, M D, B S (DUB), I M S, on relief, to act as Civil Surgeon Kaiwai, *vice* Captain B B Paymaster, I M S, proceeding on leave

THE services of Captain P Heffelman, M B I M S, are placed permanently at the disposal of the Government of Madras, with effect from the 9th July 1911

THE services of Major W E McKechnie, M B, I M S, are placed permanently at the disposal of the Government of the United Provinces

MAJOR W E SCOTT MONCRIFF, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, is granted privilege leave for 3 months, combined with furlough for 1 year and 16 days and study leave for 8 months and 14 days, with effect from the 19th November 1911, under Articles 233 and 338 (b) of the Civil Service Regulations, and the Regulations prescribed in the Notification by the Government of India in the Army Department No 31, dated the 13th January 1911

CAPTAIN E C TAYLOR, Indian Medical Service, an Officiating Agency Surgeon of the 2nd class, is posted as Civil Surgeon, Kuriam, with effect from the 19th November 1911

CAPTAIN H. CROSSLE, Indian Medical Service, an Officiating Agency Surgeon of the 2nd class, is posted, on return from leave, as Civil Surgeon, Miran Shah, with effect from the 12th November 1911

LIEUTENANT G G JAMES, Indian Medical Service, Officiating Medical Officer, 6th Berar Infantry, is posted as Mobile Assistant to the Chief Quarantine Medical Officer in the Persian Gulf, with effect from the 17th August 1911, and until further orders

LIEUTENANT COLONEL J C S VAUGHAN, I M S, Civil Surgeon, Bhagilpur, is appointed with effect from the 10th November 1911, to officiate as a Civil Surgeon of the first class, during the absence on leave of Lieutenant Colonel F C Clarkson, I M S, or until further orders

MILITARY ASSISTANT SURGEON W J K STONE is appointed to be Medical Officer at Kanchiupara, Eastern Bengal State Railway, with effect from the afternoon of the 15th July 1911

LIEUTENANT COLONEL W D SUTHERLAND, M D, C M, I M S, was attached to the Office of the Principal Medical Officer, 4th (Quetta) Division, from the 11th September to the 16th November 1911

CAPTAIN J C S OXLEY, M R C S, L R C I, I M S, Civil Surgeon, who was granted combined leave by Order No 2361 dated the 6th October 1910, has been granted, by His Majesty's Secretary of State for India, study leave from the 4th to the 30th September 1911

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major H A F Knapton, I M S, to act as Sanitary Commissioner for the Government of Bombay during the absence on leave of Lieutenant Colonel T E Dyson, M B, C M (Edin), D P H, I M S, or pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments—

Captain W M Houston, M B, B Ch (Dub), I M S, on return from leave, to be Assistant to the Civil Surgeon, Poona

Captain A F Hamilton, M B (Lon) F R C S, I M S, to act as Deputy Sanitary Commissioner, Central Registration District *vice* Major H A F Knapton, I M S, pending further orders

MAJOR V B BENNETT, M B, B S, F R C S, I M S, has been appointed to act as first class Civil Surgeon, with effect from the 9th July 1911, *vice* Lieutenant Colonel B B Grayfoot, M D, I M S, on deputation

LIEUTENANT COLONEL T E DYSON, M B, D P H, I M S, is granted from the 20th November 1911, or the subsequent date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to one year

MAJOR D R GREEN, I M S, Civil Surgeon in the new old Province of Eastern Bengal, has been granted two months' extension of leave on medical certificate. Major Green took two years' leave out of India on 8th February 1910

LIEUTENANT COLONEL F C PEREIRA, I M S, has been posted to Salem as District Medical Officer

MAJOR R K MITTER, I M S, was granted three months' privilege leave from 3rd December 1911

CAPTAIN F C ROGERS, I M S, has been granted combined leave for one year and 14 days from or after 9th November 1911

CAPTAIN J P CAMERON, I M S, is due out from furlough on 27th February 1912

CAPTAIN R E WRIGHT, I M S, took over charge as Assistant Director, Pasteur Institute, S I, on 2nd November 1911

CAPTAIN R E LLOYD, I M S, substantively *pro tempore*, Professor of Biology in the Medical College, Calcutta is granted furlough out of India for two years, with effect from the 15th November 1911

CAPTAIN R B S SEWELL, I M S, Surgeon Naturalist to the Marine Survey of India, is appointed to officiate as Professor of Biology in the Medical College, Calcutta during the absence on leave of Captain R E Lloyd, I M S, or until further orders

THE services of Major H D Peile, I M S, are, on return from leave replaced at the disposal of His Excellency the Commander in Chief in India

ON return from leave Captain J E Clement, I M S, assumed charge of Montgomery as Civil Surgeon

ON return from leave Captain W D Ritchie, I M S, is posted to Dhubi

ON return from furlough Major C E Williams, I M S, took over charge of his duties as Sanitary Commissioner, Burma, relieving Major S A Harris, I M S

LIEUTENANT COLONEL SIR CHARLES H BEDFORD, M D, has resigned the service from 18th December 1911. Sir Charles Bedford received the honour of Knighthood at the recent Durbar, he has been employed as Chemical Examiner in Bengal for many years and for some years past has done an excellent work in charge of the Central Excise Laboratory at Kasauli

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta

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BOOKS, REPORTS, &c, RECEIVED —

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Giles Gynaecological Nursing (Baillière Tindall & Cox)
Goodall's Aids to Histology 2s 6d (Baillière Tindall & Cox)
Herman's Aids to Ophthalmology 2s 6d (Baillière Tindall & Cox)
Mekisack's Medical Diagnosis 10s 6d (Baillière Tindall & Cox)
Wilowski's Tightening of Loose Teeth 4s (Baillière Tindall & Cox)
McIntosh and Fildes, Syphilis (Arnold International Medical Monographs)
R W Johnstone's Outlines of Early Development (J Currie)
H C Ross Cell Reproduction and Cancer (J Murray)
A D Fordyce Care of Infants (E & S Livingstone)
Sleeping Sickness Bureau Reports
Major Munson's Principles of Sanitary Tactics (Agents, U S Cavalry Assoc. Fort Leavenworth, Kansas)
W J Dronenrother's Minor & Emergency Surgery (W B Saunders & Co)
R H Ivy's Applied Anatomy (W B Saunders & Co)
Doiland's Medical Dictionary (W B Saunders & Co)

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Lt Col H Smith, I M S, Amritsar. Capt Green, Armytage, I M S, Calcutta. Colonel W G King, London. Lt Col Wilkinson, I M S, Lahore. Capt Shaw, I M S, Barrin. Capt L Reynolds, I M S, Dr T C Campbell, Londonderry. Lt Col D G Crawford, I M S, (ret'd) London. Major B Seton, I M S, Simla. Capt McKendrick, I M S, Simla. Capt Broome, I M S, Lahore. Major R H Maddox, I M S, Calcutta. Capt Heffernan, I M S, Madras. Dr. Fink, Burma. (Capt Reaney, I M S, Waicha. Capt Whitmore, I M S, Rangoon. Major C C Barry, I M S, Rangoon)

Original Articles

THE ESTIMATION OF THE SPECIFIC GRAVITY OF THE BLOOD AND ITS VALUE IN THE TREATMENT OF CHOLERA

By LEONARD ROGERS, M.D., F.R.C.P., I.M.S.,

Professor of Pathology, Calcutta

IF I may judge by the numerous reports which reach me of the successful application of the methods of treating cholera which I have worked out during the last few years, I think it may be safely said that the main principles of the new treatment are now well established. There is, however, still room for improvement in the details as a result of further practical experience, one of the most important points in which is the increasing reliance I now place on estimations of the specific gravity of the blood, so it may be well to return to the subject.

It has long been known the sp gr of the blood is markedly raised in cholera as a result of the great loss of fluid from the circulation. In 1906 I made a number of observations on this point, some of which were recorded in March 1908 in the *Indian Medical Gazette*. In October of the same year Captain E. J. O'Meara, I.M.S., published in the same journal some independent observations on this point and advised that when the pulse had completely disappeared at the wrist slow isotonic intravenous injections of saline should be given until the sp gr fell to normal, and he described Hammerschlag's method of making the estimations. In later papers as well as in my book on *Cholera and its Treatment* I described Lloyd-Jones' method of estimating the sp gr of the blood and gave the indications it affords as to the necessity and amount of salines to be injected.

Method of Estimating the sp gr of the Blood—Hammerschlag's method is carried out by mixing two parts of benzene with one of chloroform in a tall vessel, the mixture having a sp gr of about 1063. A large drop of blood is placed in the fluid by means of a glass capillary tube. If it rises, benzene is added, while if it falls chloroform is added until the blood just floats midway in the stirred up mixture. The sp gr of the fluid is now taken with a hydrometer, which gives the desired reading. Personally I have found this method troublesome and time-consuming, while the smell of benzene is highly disagreeable, and the apparatus is somewhat cumbersome for carrying about.

A much simpler and more rapid method is that of Lloyd-Jones. A series of small bottles of about half an ounce capacity, containing mixtures of glycerine and water of different sp grs are arranged in a box. A small drop of blood obtained from a finger is blown very

gently from a capillary tube into the centre of one of the bottles. If it sinks at once, it is heavier than the fluid and a bottle of higher sp gr is next tried, while if it rises in the first, a lower one is taken, and the operation repeated until it just floats in the centre of the bottle for a second or two, which gives the desired result. If it rises, say in the 1064 bottle, and sinks in the 1062 one, the intermediate number 1063 is the correct figure. The whole procedure can be carried out at the bedside in two minutes with a very little practice. The simple apparatus required can be made up for about seven rupees by purchasing twelve to fourteen small glass stoppered bottles and labelling them with the required numbers, which for cholera work consist of every second degree from 1048, 1050, etc., up to 1070, the normal being 1056, making twelve bottles. If infantile diarrhoea is also likely to be met with, it is well to go down to 1042, as the normal figure for infants from two weeks to two years of age is only about 1048, after which age it rises rapidly. Glycerine and water are now mixed in a tall vessel in such proportion that the sp gr of the mixture falls within the required range.

The sp gr having been verified with a reliable hydrometer the corresponding bottle is filled, larger amounts being also placed in stock bottles for replenishing the small ones in use if much work is likely to be done with them. A little water is now added to get a lower point, or glycerine to obtain a higher one until the whole of the required solutions are obtained. I have several times made up a set of bottles in an hour or two with the aid of a uinometer, although it is better to use a hydrometer with a wider and more extensive scale. A crystal of thymol may be added to each bottle to prevent the growth of moulds. I have arranged for Messrs Smith, Stanistreet & Co., of Calcutta, to make up sets of the bottles in small boxes and to keep stock solutions for replenishing them. The solution should be made up at a temperature of 80° F so as to approximate to the mean annual point in India. Two capillary pipettes are readily made by melting in the flame of a spirit lamp and drawing out the central portion of a short piece of glass tubing and dividing in the middle of the capillary part. Only a small drop of blood is required for the test, and the bottles will last for a large number of observations before the solutions require to be changed. The tendency is for them to give too low readings after a time.

The Value of the sp gr of the Blood as a Guide in the Treatment of Cholera—In my book on *Cholera and its Treatment* I advised the use of hypertonic salines (sodium chloride grs 120, potassium chloride grs 6 and calcium chloride grs 4, the last two not being necessary if not available) to be given intravenously whenever the blood pressure was below 70 mm., the sp gr being also over 1060, while if the latter rose to over 1065, indicating a very great loss of fluid from

the system, the transfusion should be given with a blood pressure over 70 mm. As a result of my experience of eighty-four intravenous injections in Europeans at Palermo last year I was led to modify the above rules in the following way. In the first place, as the normal blood pressure of Europeans is at least ten degrees higher than in natives of India, among whom most of my previous experience had been, I found it advisable to always transfuse in the former race if the blood pressure was below 80 mm. As I was living in the hospital at Palermo I was able to study my cases more closely than formerly, and I even realised that the last rule was not altogether satisfactory, for a considerable number of patients admitted with a blood pressure over 80 mm subsequently collapsed and required intravenous injections, a few of whom were eventually lost, chiefly from late complications such as hæmæmia and pneumonia. On analysing my records I found that every one of these patients showed a sp gr of 1063 or over on admission, in spite of having blood pressures of over 80 mm. Now, such a degree of concentration of the blood means the loss of several pints of fluid from the system, which it is highly advisable to replace as soon as possible by giving an intravenous injection of hypertonic saline, which will also aid in checking the copious diarrhoea. In this way collapse may be anticipated and prevented greatly to the benefit of the patient, both as regards his sufferings and the ultimate chances of his recovery. I therefore arranged for my Italian friends to carry out this plan, and they subsequently sent me notes of 56 severe cases of cholera all with a sp gr of over 1063 on admission, who were transfused at once with the brilliant result of obtaining 48 recoveries, or 85 per cent, two of the eight deaths moreover having been due to late lung complications. Even allowing for any possible decrease in the violence of the epidemic, these results speak for themselves and fully prove the advantage of relying more on the sp gr of the blood than on the blood pressure as a guide to the necessity of giving intravenous injections in cholera, and the advisability of commencing active treatment as soon as the blood is considerably concentrated, without waiting for actual collapse to set in, as indicated by a very low blood pressure or absence of the pulse at the wrist.

The sp gr of the Blood as a Guide to the amount of fluid to be injected—This point has been fully dealt with in my book, so I need only add here that if the sp gr is only 1063, then three pints will generally be sufficient, although a fourth may be given slowly if copious rice water stools are still being passed. If the figure rises to over 1065 in an adult male, as much as five pints may be necessary, the last one or two being given slowly. In average cases four pints is sufficient. These amounts will dilute the blood down to below the normal point, to allow some margin for further loss of fluid, as can be

ascertained by taking the sp gr again at the end of the procedure, or while the last few ounces are being slowly given. If the sp gr again rises to a high point as a result of continued copious evacuations, the injection may safely be repeated.

The sp gr as a Guide to the Diagnosis of Collapse due to other causes than a great loss of fluid from the Blood—Patients are not very rarely admitted to my cholera ward in extreme collapse as suspected cholera, who are found to have a low sp gr, indicating that the collapse is due to some other cause than cholera, and that intravenous saline is not indicated and may be dangerous. I have already recorded one instance in which this test saved me from giving an injection of saline solution in a case which proved *post mortem* to be one of hæmopericardium, due to a small perforation of the aorta, further cases of collapse due to severe influenza and to streptococcal pneumonia respectively were also detected in time to prevent any injurious and possibly fatal intravenous injection being given, with ultimate recovery in each. In very æmic cases a comparatively low sp gr might be misleading, but these patients generally have a hæmic condition of the blood and do not collapse as readily as others with thicker blood.

The sp gr as a Guide to saline injection in the later stages of deficient Urinary Excretion—After the collapse stage is past, and an eager watch is being kept for the re-appearance of adequate renal secretion, the estimations of the sp gr of the blood are of scarcely less importance than during collapse stage. In patients who come early under observation, and whose kidneys were previously healthy, there is seldom much anxiety regarding the action of the kidneys under the present system of treatment, with the exception of very severe cases with repeated collapse and very old subjects. Urine is commonly passed in considerable quantity shortly after the first large intravenous saline, and the deadly stasis of the renal circulation is thus prevented. It is far otherwise with cases which have begun in a comparatively mild way, but who are only brought to hospital late on the second or even on the third day of the disease for threatened hæmia. These patients, who have not been treated by saline injection in the first stage, are found on admission to have passed no urine for one or two complete days and are already in a most dangerous condition, although their general appearance may not show it. Here, again, the sp gr of the blood affords the key to the proper treatment, for if the blood is still markedly short of fluid, the kidneys cannot work efficiently and saline injections of some kind are clearly necessary. In this stage the copious diarrhoea will have ceased, so that hypertonic saline is no longer indicated in order to check the loss of fluid from the body, so isotonic solutions are indicated, one and half drachms to the pint being used if any diarrhoea

remains, but if not, even one drachm to the pint may be injected subcutaneously. The best method of giving the fluid depends on the degree of concentration of the blood. If the sp gr is over 1060, it is generally advisable to give a slow isotonic intravenous injection at the rate of about one ounce a minute, so as not to run any risk of producing oedema of the lung, the blood pressure being fairly high at this stage. One or two pints will suffice if the sp gr is not over 1063, which is rarely the case at this period. If the sp gr is not over 1060, a pint of isotonic solution should be injected subcutaneously, the best position being under the skin of the anterior abdominal wall where it causes less pain than over the ribs. This injection may be repeated every four to six hours until the sp gr falls to 1050, or even lower, well below normal, to allow excess of fluid for excretion. It is not advisable to carry the dilution below 1045 for fear of producing oedema of the lungs. If the respirations are already increased in frequency and depth, indicating commencing œmia, I have found it advantageous to prop the patient up in bed, which appears to ease the breathing and lessen the danger of hypostatic congestion of the lungs. By these means, together with the use of cardiac stimulants and vaso-constrictor drugs if the blood pressure is also deficient, as detailed in my book, many patients may be tided over the dangerous later stages of deficient urinary excretion, who would otherwise be certainly lost. Subcutaneous salines were largely used by the Italian doctors at Palermo for this purpose with good results, which has led me to give them more frequently than I previously did.

An illustrative case may help to make the subject clearer. In a recent very severe attack of cholera in a well-known European patient, the collapse stage was successfully treated by an intravenous injection of five pints of hypertonic saline, and some seventy grains of permanganate of potash by the mouth within five hours in keratine coated pills, as made for me by Parke, Davis & Co., the rice water stools changing to green small ones within eight hours under this active treatment. The sp gr of the blood, however, again reached 1064 in spite of a practically normal blood pressure, so rectal salines were commenced and served to dilute the blood slightly for a time. At the beginning of the second day the sp gr was again 1064, and no urine has been passed except a few ounces shortly after the first intravenous injection. It was clear that the kidneys could not excrete as long as the blood was so deficient in fluid. Yet the blood pressure was quite normal and the general condition of the patient good, so that without the aid of the sp gr test it would not have been possible to detect the dangerous state the blood was in, and the need for further immediate active treatment. Two and half pints of normal saline (1½ drams to the pint) were now slowly injected intravenously, which diluted the blood down to a little below the normal point, and

a few hours later urinary excretion commenced again and continued during the second night. During the third day it ceased once more and the position became very anxious, although there were still no signs of actual œmia. The sp gr was found to have again risen to 1060, so a pint of saline of a strength of one drachm to the pint was injected subcutaneously and repeated after five hours. This sufficed to re-establish the renal functions, and later on nearly three hundred ounces of urine were passed within forty-eight hours, with the elimination of all the toxins from the system and great improvement in the general condition. It is not too much to say that on two occasions in the above case a critical condition was detected and successfully dealt with mainly through the knowledge gained from the estimations of the sp gr of the blood. Personally, with all my present experience, I do not feel that I can do my best for a cholera patient without the aid of this simple apparatus, which is indeed at least as indispensable as a manometer for estimating the blood pressure, great as is the value of the last-named instrument in the treatment of Cholera Asiatica.

A PRELIMINARY NOTE ON A NEW METHOD OF INTRAPERITONEAL ADMINISTRATION OF ROGERS' HYPERTONIC SOLUTION IN CHOLERA

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THE introduction of the hypertonic solution by Major Rogers in conjunction with the administration of permanganates in the treatment of cholera has, I think, convinced everyone who has had much experience of the disease that the true basis of procedure has been discovered, and the success which has attended the practical application of his reasoning is such as to encourage the less favourably circumstanced among us to hope for an improvement in our own results. The much larger proportion of cases of cholera which occur in India do not, however, occur within reach of special cholera wards with a trained staff and efficient nursing, where accurate observations are the prelude to treatment which is impracticable in a coolie hut or a Bengali village house. And yet, there must be a considerable number of men who, like myself, have found it exceedingly desirable that their methods, such or similar conditions obtaining, should be attended with more hopeful results.

During the working season of 1910-11 on the Lower Ganges Bridge, labour was very difficult to obtain, and that which was ultimately recruited quite late in the season proved exceedingly undesirable from the hygienic standpoint, with the result that cholera was both introduced by arrivals from places where the disease was epidemic, and kept alive by intercommunication with

adjacent villages, where it is probably endemic. The occurrence of the disease was followed by panic and wholesale desertions, so that the important work of completing the river training bunds before the Ganges was again in flood was for a time in jeopardy. A longer working season than usual saved the situation, but the position had to be faced as to what would happen when a still greater labour force must be introduced in subsequent seasons for the earthwork on the "Approach Banks" which aggregate some sixteen crores of cubic feet. Within the limits of the project's jurisdiction our sanitary measures were hurried on and tube wells sunk at frequent intervals along the line which these gigantic banks would follow. At the same time an anti-cholera scheme, to operate in an area extending for twelve miles by three miles on the left bank, around the sites of the bridge and terminals, received the sanction of the two Provincial Governments and the Government Railway Board. This scheme places six medical parties in fairly equal sub-division in these two areas, who, like the medical staff on the bridge project, work under my direction. These parties are primarily "preventive" in character, making systematic visits to all inhabitants of villages with the object of instructing them in the elementary facts concerning cholera and collecting information which it is hoped may direct us to foci of infection wherever the disease occurs. The sinking of tube wells on a large scale with the object of providing, wherever possible, a comparatively safe, as opposed to a probably polluted water supply is also part of the scheme. But the question of the treatment to be adopted was one which could not receive too much consideration. The *lavang* and quack abound, and it was felt that unless our treatment "scored," and these hindrances to any improvement in village conditions were driven to apply their energies in less pernicious directions, the "preventive" work would be exceedingly difficult to carry on. The exhibition of permanganates was simple and put into practice at once, and in several villages the permanganate pills and solution have become very popular and have, I believe, accounted for many recoveries in early cases. Adrenalin chloride, as advocated by Drake Brockman, was also added to our armamentarium and justified its inclusion, but the typical well-set case proved intractable, and although the injection intravenously of hypertonic solution was done in quite a number of cases, the results were disappointing, and I had to reluctantly conclude that it was useless to persevere with it under the conditions in which this work must be carried on.

Whilst carrying out the intravenous method, in several cases, instead of repeating intravenously, I adopted the plan of giving an intraperitoneal injection of the fluid and thought that I could trace considerable improvement in some and recovery in one case to this method. The

technique, as adopted, was so simple that I had no trouble in making my staff familiar with it, and it is the method now being followed, and which in Paksey, the headquarters of the bridge project, has so far met with a very considerable measure of success. Our first cases of cholera amongst coolies occurred this year at the beginning of February and up to the present (March 6th), eighteen cases have been treated. Four were secured early or were mild in character, and yielded to the permanganates and adrenalin chloride alone. The other fourteen cases were all of a severe character and were treated with the above drugs with the addition of intraperitoneal injections of Rogers' hypertonic solution of amounts varying from sixty to one hundred ounces. Amongst these fourteen cases there has, up to the present, been one death, and that, in a man who was admitted in a very bad general condition with no peripheral pulse and with a marked abdominal distension which could only be slightly reduced.

One recognises that it would be absurd to base any claim to have secured exceptional results on so few cases, but Major Rogers suggests that, if explained in a preliminary note of this character, the method might be tried by others, under similar circumstances, during the present cholera season and its value or otherwise more thoroughly demonstrated.

The same general indications noted by Rogers for the intravenous injection are accepted for the intraperitoneal. It is noted that a blood pressure which falls below 70 degrees continues to fall rapidly, as a rule, to between 30 and 40, so that preparations for the injection are made as soon as the blood pressure is discovered to be below the first figure. The most convenient instrument for taking blood pressure observations we have found to be Leonard Hill's new type of Sphygmometer, which is portable and easily manipulated by one person. For the actual puncture of the abdominal wall I use a trocar-cannula specially made for me by Messrs Smith, Stanistreet & Co, of Calcutta.

The site of the puncture, just below and a little to one side of the umbilicus (where the peritoneum is attached to the posterior surface of the anterior abdominal wall) is marked by the application of a small pure carbolic acid swab and the tissues grasped with both hands by an assistant on the other side of the selected spot, which is, while being drawn quite taut, also brought into the middle line immediately below the umbilicus. The previously sterilised trocar-cannula is thrust boldly through and the trocar extracted. The rubber tubing leading from the reservoir is slipped on to the cannula and well over its shoulder. The hypertonic solution is then allowed to run in at the rate of about a pint in four or five minutes—the temperature being regulated in the same way as for the intravenous method. The amount required cannot be indicated by the improvement in the blood pressure observable, as

such improvement is not immediate, but a faint clinical indication of, when to stop is when the patient experiences a desire to micturate. Micturition, though attempted, does not indeed ensue at this point but generally coincides with the return of the blood pressure in the radial artery some few hours later. The one apparent risk—that of injuring the intestine during the process of puncturing is, I am convinced, apparent only. I made examinations *post mortem* in the early cases, where I now feel that the method failed because too small amounts were given, and in no case was there any evidence of intestinal injury, nor has there been any sign of peritonitis in any of the cases which have recovered.

The treatment has already been carried out by the four Assistant-Surgeons serving with me, both under my supervision and independently, with satisfactory results.

To reduce the risk of sepsis as much as possible I have arranged with Messrs Smith, Stanistreet & Co. to put up a compact cholera outfit which will contain everything required, including a sixty-eight ounce flask in which the boiling of the necessary solution and the sterilisation of the trocar-cannula is performed at the same time and the necessity of transferring the fluid from one flask to another is obviated.

I shall be glad if others who may have the opportunity of giving this method a trial will communicate their results to enable a reliable opinion as to its value to be obtained.

CHOLERA IN THE CAMPBELL HOSPITAL, 1911

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DURING 1911, 232 cases of cholera were admitted, of whom 134 or 58% recovered. Clinical history in detail is not available in 38 cases. 68.5% of these recovered, of the remainder 10 died either in the admission room or within ten minutes of admission. Excluding these we have 184 cases left (forming the subject of this paper), of whom 58.6% recovered. It is very important to note that 78% of the 184 cases were admitted in a totally collapsed condition with no radial pulse at all.

Treatment—As soon as possible after admission all cases with a blood pressure below 80 mm received intravenous injections of hyper-

tonic Saline (Dr Rogers' Formula) with a view to raise the blood pressure to 110 or over, in xv of Pituitrin or Adrenalin was added to each injection as a matter of routine. The temperature of the saline in flask varied from 100° to 105° F. There was no case of hyperpyrexia, specific gravity of the blood was not taken in the cases under consideration, treatment being guided mainly by blood pressure indications and other symptoms. In a great majority of cases injections had often to be repeated, as after a few hours of one injection the B.P. fell to 70 or under. Divided doses of calomel and camphor as a matter of routine till the stools changed colour. Calcium permanganate water was given *ad lib* to drink, but generally the patients could, with difficulty, be persuaded to drink it in any quantity, owing to its unpleasant taste. Stimulants with strychnine and digitalis were freely used. Rectal salines every two or four hours in all cases that were not markedly improved after the first injection and in uræmia. To raise the B.P. in collapse and in threatened uræmia, pituitrin, adrenalin, strophanthin, digitalin and strychnine were extensively used. For uræmia, subcutaneous rectal and intravenous salines according to circumstances, the vaso-constrictors noted above and dry-cupping were used. After-diarrhoea was never checked, but some cases with severe flux of yellow colour received bismuth.

Severity of cases—It has already been pointed out that 78 per cent of the cases were admitted absolutely pulseless and totally collapsed. Against such heavy odds we were fortunate enough to secure a recovery of 58 per cent. All doubtful cases had their diagnosis confirmed by bacteriological examination of the stools. Four cases had bloody stools and they died. The following table A shows the number of cases and duration of the disease before admission into hospital.

Cases in which the duration could not be ascertained, mainly owing to such cases being 'picked up' unconscious by the police, are grouped as 'unknown'. It will be seen that the earlier the cases came in, the greater was the rate of recovery. The table further shows the cause of death as influenced by early or late treatment. Death from uræmia has risen directly with delay in obtaining treatment and death from collapse has proportionately decreased.

A

Duration of disease before admission in hours	3	6	12	18	24	36	48	Days	Days	Days	Un known	Total
Number of cases	3	31	59	16	20	2	11	3	4	6	45	184
Percentage of recovery	33	61	64	62	60	50	54	2	3	1	45	53.7
Cause of death—Collapse %	33	19	18	12	5		18	100	0	0	55	
Uræmia %											22	
	33	9	14	25	30	50	27		100	100	15	

Frequency of Injections—In about 10 per cent of cases no amount of fluid injected was sufficient to raise the B P to 70—80 mm. In the rest, by the first injection, the B P was raised to 110 or over, but after a few hours it fell and the injections had to be repeated. A considerable number of such cases, in spite of repeated injections, died of collapse, it was impossible, in spite of everything that could be done for them, to maintain the B P for any length of time. Others were tided over the collapse and either recovered (the majority), or died of uræmia. This is shown in Table B.

B.—Showing number of injections required in a case

Number of Injections	0	One	Two	Three	Four	Five	Total
Number of Cases	23	86	41	21	5	5	184
Percentage of Recovery	78	52	56	24	20	0	
Percentage of Deaths	9	9	18	57	40	80	

It will be seen that 23 out of the 184 cases did not get an injection. 78 per cent of these uninjected cases recovered, 9 per cent died of uræmia and the rest of collapse—the collapse setting in very suddenly and in such circumstances that it was not possible to inject them. I may mention here, in passing, that by observing the specific gravity of the blood in such cases (as pointed out by Dr Rogers) the collapse may be anticipated and provided for by suitable injections. The table shows that the fewer the number of injections required in any case, the greater was the rate of recovery; the oftener required, the greater was the incidence of uræmia. A fairly accurate prognosis could always be given by noting the condition of affairs a short time after the first injection. Injections were repeated mostly for overcoming collapse, but in some the later ones (of normal saline) were given to combat uræmia.

Total quantity injected—Table C shows that many cases required a total quantity of six pints of saline each.

C—Total amount of saline injected in a case

Total quantity in pints	2	4	6	8	10	12	14	16	18	20	22	24	26
Number of Cases	3	38	6	29	14	16	10	9	2	3	6	3	4
Percentage of Deaths	0	37	40	28	64	44	33	41	50	100	80	100	100

The greater the quantity required, the higher was the mortality. Practically none recovered who had had to receive 18 pints and over. Usually 6 pints at one operation was required to raise the B P to 110—115 which was the end kept in view. The largest quantity thrown in at one operation was 8 pints. One is tempted to use large quan-

ties at a time if one's sole object be to raise the B P to 100—110 at all costs, which is apparently the great point to achieve to save the patient, but there are objections to the process which I shall refer to later.

Cause of Death—Table D shows that the majority of deaths was due to uræmia, collapse and asthenia coming in order next.

D—Deaths

Cause of Death	No	%	
Uræmia	36	47	Total 76
Collapse	32	42	
Asthenia	7	9	Bed Sore 2, Beri Beri 1
			Heart Disease 1
Tetanus	1	1	Aborted outside

Uræmia—Including the moribund ones, 6 cases were admitted in uræmia. Others got it after the collapse was overcome. In majority of cases of uræmia the B P remained at 110—115 day after day, some days being the average, without a drop of urine being passed. Others passed scanty urine, and a few quite moderate amounts, but they still died of uræmia. In such cases the urine nearly always had a low specific gravity and abundant albumen. A sustained B P alone does not seem to be the *only* key to restart the flow of urine and save from uræmia. The urine was analysed in 59 cases, 40 of whom showed albumen in varying quantities, often in excess. 87.5% of these recovered and 12.5% died. Of the 19 that did not show any albumen, 17 were cured and 2 died. It is interesting to note, of uræmia. The urine of the deaths from uræmia that had albumen had it in considerable excess and showed a sp gr between 1004 and 1008. On the other hand in a considerable number of recoveries the urine was loaded with albumen, but the specific gravity was always higher than 1010 in the average 1015. As is to be expected, the sp gr of the urine (and therefore the total solids) was the factor that mattered, not the albumen. The albumen was not the criterion of kidney efficiency.

Uræmia and age—Table E shows the admissions classified according to age and the incidence of uræmia in percentages at various ages.

YEARS	8-15	16-20	21-30	31-40	41-50	51-60	61-70
Number of Cases	7	18	76	55	19	5	4
Percentage of Deaths		22	18.5	21.5	26	20	

The cases are not many to allow of any accurate generalisation, but it is curious to note that, roughly, about 22 per cent. of the cases at all ages

got uræmia So far as can be judged from the age, previous kidney disease does not appear to be an oft-present or necessary antecedent to death from uræmia Some of the uræmias with a sustained blood pressure for days were in quite young people

Treatment of uræmia has been singularly unsuccessful in my hands Cases with quite high blood pressure received rectal salines others had, in addition to rectal salines, subcutaneous saline and small quantities of normal saline (intravenous) slowly and cautiously given, pituitrin, etc

Collapse—42 per cent of the deaths was due to collapse, a figure closely approaching that for uræmia This high percentage is easily explained when we remember that a great majority of our cases were admitted totally collapsed and pulseless, and who had been in that condition for hours before admission

I have divided deaths under this head into two groups The first group comprises cases, not an inconsiderable number, admitted in profound collapse Injections up to seven pints at a time were given, but in such cases the vaso-motor paresis was so intense that the radial pulse either did not return at all or was only perceptible as an evanescent flutter They could not be brought round from collapse and died in a very few hours The second group, the majority, comprises cases which were also admitted pulseless and collapsed, but after an injection of a moderate quantity (4 pints) of saline, the pulse returned with a B P of 105 or more But within a short time it fell to 0—70 and injections had to be repeated to restore the B P It was noticed that in the second and subsequent injections the quantity of saline required to raise the B P exceeded that required at the previous injection If the previous quantity or less was given, the pulse did not return, and if the quantity was much exceeded with a determination to raise the B P to about 100 at all costs, the patients soon got the much-dreaded hurried breathing due to what I consider was pulmonary oedema and labouring right heart and died very shortly This same thing happened in the first group if injections were persisted with, such cases, therefore, are likely to prove fatal if treated with excess of saline injections, whether to raise the blood pressure or to lower the specific gravity of the blood if it was possibly high in such cases Except in the latter possibility, estimations of the specific gravity of the blood should afford a very good safeguard (as pointed out by Dr Rogers) against excessive saline injections

But in the class of cases under consideration if the specific gravity indication is a bar to further intravenous saline, the alternative has been to fall back upon subcutaneous (cautiously given)

and rectal salines and the vaso-constrictors, these were not of much value in any case I must say, however, that the whole aspect of the cases may be altered if the disease be tackled soon after its onset

THE TREATMENT OF THE EARLY STAGES OF SENILE CATARACT

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THIS is a subject of supreme importance both to the patient himself and to every member of the profession who has to deal with him I have again and again been asked "Can you do nothing to prevent the development of cataract to cause it to disappear in its early stages, or to stay its development? Until recently my answer has been in the absolute negative, that no such remedy is known to science Some months ago, a European lady came to me from a distant station complaining that she could no longer see to read or write and that her vision for distance was becoming rapidly useless On examination I found a thin nebula on the front of each cornea in the pupillary area, the result of old-standing trichoma I dilated her pupils with homatropine and observed that the nebulae were only partially the cause of her failing sight as she had incipient cataract in both eyes I explained to her that we hoped to clear the nebulae (which were very thin), and that thus we might improve her vision a little, but that she had cataract which I would advise her to have operated on a little later I gave her a subconjunctival injection of cyanide of mercury (20 m of 1 in 4,000 solution) She had to leave two days after, but wrote to me about a month later that the result was marvellous as she could now see distance as well as ever, and could thread a cambric needle with her ordinary presbyopic glasses

The corneal haze having cleared up was not sufficient to explain this, considering the condition of the lenses It was only explicable on the understanding that the hyperæmia induced had acted on the lens as well as on the cornea How this came about I leave to pathologists to explain

I then determined to try this remedy on the early stages of cataract in patients whom I could keep under observation for a sufficient length of time The following list is a small one which I hope to supplement at a later date, but in such experimental work the ordinary illiterate villager is unsatisfactory as it is difficult to retain him in hospital long enough for observation, and it is equally difficult for a busy man to follow him up when he has left hospital It is also extraordinarily difficult to get any details of vision from an illiterate villager with any degree of accuracy.

The following cases which include Europeans and educated natives show that in some cataracts the result is phenomenally successful, in others it has not been successful or only partially so. The varieties in which treatment is not successful I may be able to define at a later date. I am disposed to consider that vision that has been reduced by half or less for distance is amenable to treatment. If reduced over a half, there is little hope of improvement. The most promising cases are those in which distant vision has been reduced by about 30 p.c. or under.

I—Resildar, B. C., soldier, aged 56, left eye on ophthalmoscopic examination has immature cataract, normal fundus, vision $\frac{1}{6}$ and Jaeger V. On 10th January 1912 a subconjunctival injection of cyanide of mercury (20 m. of a 1 in 4,000 solution) given in left eye. On 15th January 1912, he could make out half the letters of $\frac{1}{12}$. On 31st January 1912 he could make out all the letters of $\frac{1}{12}$ and with a + 2 D presbyopic lens he could read Jaeger II.

II—Parsee, aged 60, right eye has a slowly sclerosing lens with a history of three years' progress, fundus apparently normal, opacity central, a little more developed towards the temporal than the nasal side. He could with difficulty make out 60 metre type at 7 feet with a + 4 D lens which he had worn for some years for distance, and a + 7 D. for near objects with which latter lens he could read Jaeger VIII $\frac{1}{2}$ with difficulty. The opacity in his lens was the type which ultimately becomes amber coloured. On 20th January 1912 subconjunctival injections of cyanide of mercury (20 m. of 1 in 4,000) given in right eye. On 26th January 1912, he could read Jaeger IV with the same difficulty as he formerly could read Jaeger VIII $\frac{1}{2}$ and he could read 60 metre type at 15 feet. The lens he had been using for some years as above mentioned was + 4 D for distance and + 7 D for near objects. Now + 1 D for distance and + 5 D for near suits him best. Second injection on 27th January 1912, no further progress obtained.

III—Madame St. L., European nun, teacher, immature cataract left eye, fundus normal, vision $\frac{5}{8}$ Jaeger V. Subconjunctival injection (1 in 4,000) on 16th January 1912. On 30th January 1912 could read Jaeger I at 12 inches with presbyopia + 3 D glasses and distance $\frac{5}{8}$. I have recently heard that progress is continuing and that she can now continue her work as a teacher with that eye so well that she wishes to put off the operation for cataract of her right eye (which had a relatively mature cataract).

IV—Sister P., European nun, aged 46, mature cataract left eye, immature cataract right eye. Myopia—15 D both eyes, near vision without glasses = Jaeger XIV with right eye. On 16th January 1912 subconjunctival injection of mercury cyanide (1 in 4,000). On 15th February

1912 she could read Jaeger I and thread a cambric needle. The distance lens she was using previously was a — 9 D sp with which before treatment she could see 60 metre type at 2 feet distance. On 15th February 1912 with the same lens at a distance of 4 feet she could read V metre type.

V—Babu G., railway station master, on furlough, aged 50. Incipient cataracts both eyes, fundus normal.

Left eye he could read Jaeger II with difficulty with a + 2 D sp and + 1.5 D cyl (which he had been wearing for some time), and with + 1.5 D cyl could read half the letters of $\frac{1}{12}$.

Right eye with a + 3 D sp and a + 2 cyl (which he had been wearing for some time) he could read Jaeger 4 and distance $\frac{1}{4}$.

On 1st February 1912 subconjunctival injection of cyanide of mercury in both eyes. On 10th February 1912 with *left eye* he could make out half of the letters in 6 metre type, 8 metre type easily and Jaeger I with same glasses.

Right eye he could make out $\frac{1}{12}$ and Jaeger 2 $\frac{1}{2}$. On 22nd February 1912 with *left eye* he could make out all the letters of 6 metre type and half the letters of 5 metre type at 6 metres. He could read Jaeger I with great ease.

Right eye no further progress.

VI—Pathan, illiterate, 50, immature cataracts both eyes, fundus normal. Distance bull's eyes — $\frac{1}{12}$, near vision no means of estimating. 27th December 1911. Subconjunctival injection of mercury cyanide (1 in 4,000) in both eyes.

On 20th January 1912 distance bull's eyes = $\frac{5}{8}$. He could thread a cambric needle which he could not do before.

VII—Major R. A., right, eye blind from glaucoma.

Left eye, lens hazy, fundus normal.

He could read with his usual spectacles Jaeger IV with difficulty and $\frac{5}{8}$. On 7th February 1912 subconjunctival injection of mercury cyanide (1 in 6,000) given. On 12th February 1912 he could read all the letters of 6 metre type and Jaeger I with difficulty with his usual spectacles. On 12th February 1912 second injection of same mercury cyanide given.

On 21st February 1912 distance vision = $\frac{5}{8}$ near vision = Jaeger I with ease with his usual spectacles. Being an intelligent man he could describe the cloud gradually getting small and finally disappearing. He was about to be invalided from the army in consequence of his sight, but now he can go back to duty.

VIII—D. R., Hindoo clerk—left eye immature cataract, fundus normal. Distance vision = $\frac{5}{8}$. He says he can see outlines of letters in Jaeger IV, but does not understand Roman characters. On 13th February 1912 subconjunctival injection of mercury cyanide (1 in 4,000). On 20th February 1912 distance vision = $\frac{5}{8}$, and he could thread an

ordinary cambric needle which I consider equal to Jaegar I

The pain induced by a subconjunctival injection of cyanide of mercury under cocaine is very severe. It lasts for three or four hours after which it amounts to a mere inconvenience. To control this it is necessary to put the patient lightly under chloroform and to give him a hypodermic of at least $\frac{1}{2}$ gr. of morphia.

The eye looks exceedingly ugly for several days, and patients should be warned beforehand not to be alarmed at this. I have never seen any evil results from the use of subconjunctival injections of mercury cyanide and the conjunctiva after a few weeks resumes its physiological condition.

The improvement in these cases was first noticed by the patient on the third or fourth day and improvement goes on steadily for close on a month.

Time will show if this improvement will be permanent. I hope to be able to give the condition of these patients a year hence and to supplement the list.

Cases 1, 2, 3, 4 and 8 came to me for the treatment of advanced cataract in the other eye.

BLACK-WATER FEVER IN BURMA *

By LAWRENCE G. FINK, M.B., C.M. (Edin.)

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1 INTRODUCTION

In the *Indian Medical Gazette*, September 1907, pp. 328-31, attention was drawn by me to the fact that Black-water fever occurred in certain districts in Burma and that in all these districts intense malaria was encountered. Since the publication of this article Burma has been included in the geographical distribution of the disease—*vide* Christophers' and Bentley's Monograph on Black-water fever. In Burma, as in other countries, certain districts are more malarious than others. At the Imperial Malaria Conference held at Simla in October 1909, Major James, I.M.S., emphasised the necessity of ascertaining the distribution of malaria accurately and definitely in each province in India. He stated that until quite recently it was a common belief that Assam, as a whole, is intensely malarious, but the truth is that a great tract of the country is only very slightly malarious and that in some areas the disease does not occur. He added that he believes that the same may be true even of a country with so bad a reputation for malaria as Burma. There is reason to believe that there are grounds for this bad reputation in certain districts of Burma and the

truth will be revealed by the detailed investigations which have now been started by, and entrusted to, selected malaria experts. The sweeping remark made at Simla by Mr. Chalmers (the Civilian Member from Burma), that malaria was not so bad in Burma as to need any particular measures, was unfortunate. He based his conclusion on the low fever death-rate, *viz.*, 10 per mille in Lower Burma and 8 per mille in Upper Burma, compared with 19 for India. The registration of vital statistics in Burma is admitted to be far from reliable and the causes of death registered by ignorant village headmen are very misleading. As a matter of fact, in some of the very malarious districts of Upper Burma (Myitkyina, Katha, Bhamo and Ruby Mines Districts, for example), no vital statistics are collected. The lines on which investigators in each province should work for the purpose of mapping out the really malarious tracts and districts have been detailed very carefully by Captain Christophers, I.M.S., and the progress of the work has been published and will continue to be published in "Paludism." The memorandum of questions to which answers are desired by the Central Committee gives an idea as to the scope of the work which is being undertaken. The last question (page 12 "Paludism" No. 1) is "In what parts, if any, of the province does Black-water fever occur?" This question appears to suggest that the Committee recognize some connexion between Black-water fever and malaria. According to Decker, etiologically, hæmoglobinuric fever stands in the same relation to malaria as do tabes and dementia paralytica and may, very properly, be regarded as a "para-malarial infection." At the Bombay Medical Congress 1909, Christophers and Bentley stated that the malarial origin of Black-water fever is very generally admitted, but there is still a considerable amount of misconception regarding the relationship between malaria and this disease. They indicate how Black-water fever may be malarial in origin and yet not be malaria. Decker says the fact that hæmoglobinuric fever does not respond to quinine is one of the strongest evidences that it is not an attack of malaria (*per se*), *vide* cases 2 and 3.

2 DISTRIBUTION IN BURMA

So far as I am aware cases of Black-water fever have occurred in the Myitkyina, Katha, Bhamo and Ruby Mines Districts. One case was also reported to me as having occurred at Taungdwingyi in the Magwe District and one at Pyaw-bwe, Yamethin District, after his return from Myitkyina where he had had repeated attacks of malarial fever. At all these places pernicious types of malaria have been encountered. A glance at the map of Burma will show that

* Paper sent in to Far East Association of Tropical Medicine, &c.

the 4 districts first mentioned are grouped together between 23° and 26° 30' North latitude, practically between the same parallels of latitude as Assam and the Duars, where Black-water fever is known to occur Eastward between the same parallels are the Southern States of China, *viz*, Yunnan, Kwangsi and Kwantung, also the island of Formosa Jefferys and Maxwell, in their recent book on "*Diseases of China*," state that it is doubtful if true Black-water fever exists in China, but two very suggestive cases have been reported by Maxwell, Fukien and McCandliss, Hoihow They, however, add that Wenyon, Fatshan, says "It ravaged like a plague the Chinese army on the Tonquin border of Kwangsi" (This according to Deaderick occurred in 1885) The authors of "*Diseases of China*" also say that Black-water fever is said to be found in Formosa, but they have never themselves seen a case and, despite diligent enquiries, have failed even to hear of one They also state that the disease has only appeared to any extent in India during the last quarter of a century, (according to Deaderick only since 1855), that it has recently made its appearance in the New Hebrides and that it is quite possible that it may yet do the same in China These facts have an important bearing on the history of the disease in Burma From the literature at my disposal I am unable to find any recorded case earlier than the one reported by me in the *Indian Medical Gazette*, September 1907 This case occurred at Myitkyina in July 1899 The patient was a Gurkha Military Police Sepoy, aged 22 years From the scanty information received by me, I am aware of no less than 14 cases of Black-water fever in Upper Burma, including the first case published by me Out of these 14 cases, 7 were Europeans with 4 deaths, 5 were Gurkhas with 2 deaths, 2 recoveries and one result unknown, 2 were Punjabis with 1 death and 1 recovery The cases amongst the Gurkhas all occurred in the Myitkyina district, and 3 were under my personal observation and treatment I have no doubt that other cases have occurred, of which I have no information The case of a Civil Servant from Burma was published by Dr J E Frere in the *Lancet*, June 18th, 1910, pp 1716-17 Dr Frere's strictures on the alleged diagnosis of this case in Burma and on the irregular doses of quinine given for malaria prophylaxis in this province were commented on by me in the *Lancet* of 10th September 1910, pp 847-8

3 SOME ETIOLOGICAL CONSIDERATIONS

Dr Mitchell Bruce, in his address on medicine, delivered at the 78th Annual Meeting of the British Medical Association (*BMJ*, 30th July 1910 pp 246-51)—says there are three factors to

be reckoned with in the causation of acute infective diseases First, there is the cause which we call essential, the specific infection, an extrinsic influence, the element without which in the particular instance, and in every other instance, the disease would not have occurred Secondly, there is the patient's resistance to the specific infection, an intrinsic element Thirdly, there may be incidental or concomitant circumstances or associations which are not essential, because not present in every instance of the disease, but which by occurring incidentally in particular instances, either favour the essential influence directly in its invasion of the body, or, on the other hand, lower resistance and thus directly contribute to the production of the disease In discussing these concomitant circumstances he says they are of great variety, both in kind and of the manner of their incidence on the body When they act immediately they are commonly known as the exciting, precipitating, determining "Causes" of disease, but in a large number of instances the connexion is remote Is it possible, he says, to trace common diseases to the common influences around us with scientific correctness? It is most difficult to say how far each of these influences acts directly, how far indirectly or incidentally only—that is, by interfering with resistance on the one hand or by assisting essential causes on the other hand The problem of the causation of many of the common diseases, when it comes to be faced practically, proves to be one of extreme complexity It is rendered still more complex and difficult by the fact that the same influence may in one instance be an essential cause, in another instance an incidental circumstance only Taken together, the three factors concerned in the production of disease constitute nothing less than the total relations of the individual and of the community to their environment In devoting attention to these elements of causation, the practitioner contributes his share of the materials of which the doctrine of etiology is being constructed Not all of us, indeed, but few of us, can work at the higher pathogeny These words from the pen of so eminent an authority should encourage practitioners who may not be experts in pathology to take part in working out the etiology of this most interesting disease, or as Deaderick speaks of it, "that mystic para-malarial syndrome, haemoglobinuric fever" In considering the factors in the causation of Black-water fever in Burma, *malaria* may be regarded as the essential cause At the Imperial Malaria Conference Major Kenrick, I.M.S., stated that in the Central Provinces of India it was noteworthy that malignant tertian forms are more often met with in association with forests and low-lying land near jungle hills Major Leonard Rogers also pointed out that, in Bengal, villages surrounded by dense

jungle had a higher spleen rate than those with little or moderate amount of jungle. In Madras, from the investigations of the Royal Society's Malaria Commission, the most malarious portions were at the foot of the hills. In the four Upper Burma districts where Black-water fever has been noted, the country consists of a series of high ranges of hills and is intersected here and there by valleys, all leading towards the river Irrawaddy or its principal tributary the Chindwin. The hills which range from 1,000 to 10,000 feet above sea-level are covered, except where they have been cleared for cultivation, with dense forest with a tangled undergrowth of cane and small bush. There are also tracts of low-lying flat land, more or less water-logged during the rains and used to some extent for paddy cultivation. Mr H N Thompson, late Deputy Conservator of Forests, Burma, in describing the low-lying alluvial evergreen and swamp forests of the Hukawng Valley, says the two factors that determine the distribution of this type of forests are a heavy rainfall and a rich alluvial soil, very often with a substratum of clay, the latter, when close to the surface, giving rise to the modification known as swamp forest, but this modification is also brought about by the flooding of the river banks for many months in the year and the retention of the flood-water in the low-lying depressions adjacent to the river beds. The country thus presents vast breeding-places for mosquitoes. At Myitkyina the following Anophelines were identified—(1) *M. Rossii*, (2) *N. Fuliginosus*, (3) *N. Stephensii* and (4) *N. Theobaldi*. The latter three species are malaria-carriers. Pleghn suggested a possible relation between the geographical range of hæmoglobinuric fever and that of certain mosquitoes. According to Daniels the carriers differ in the different countries, and in Africa *M. Funesta* is the commonest carrier in places where Black-water fever is prevalent. As no careful malaria survey has yet been made, no definite statements can be made as regards the extent to which malaria prevails in Burma, and what is the usual percentage of infected anopheles or the proportional prevalence of the different varieties of malaria parasites in the areas where malignant types of the disease are met with. It has, however, been stated by Daniels that no morphological differences have been observed in the malaria parasites in a malarious country where Black-water fever is endemic and in malarious countries where it does not occur. Deaderick says that while all localities in which Black-water fever exists endemically are highly malarial, there are very extensive regions in which the severest forms of tropical malaria are rampant where hæmoglobinuric fever is unknown. Malignant types of fever occur not only in the Myitkyina and adjacent districts where Black-water fever occurs, but also in other

parts of Burma where this disease does not occur, so far as is at present known. The disease has not, however, been known to occur in any area free of malaria, and any such cases would be diagnosed as paroxysmal hæmoglobinuria, provided they had not been previously infected with malaria or come from an endemic Black-water fever area. Hence malaria may properly be regarded, in any malarious area, as the essential cause of Black-water fever, it being the element without which the disease would not occur. Deaderick's opinion of the relation of malaria to Black-water fever is that the former is essentially and solely the predisposing cause, and in some cases it may also act as the exciting cause. Christophers has shewn why the malignant tertian parasite with its special destructive action upon red cells and consequent stimulation to their phagocytosis should, above all, be the one concerned in the causation of Black-water fever.

The second etiological factor has to do with the patient's resistance to the specific infection and involves the consideration of race, sex, age, family predisposition, idiosyncrasy, previous attacks of hæmoglobinuria, length of residence in the endemic area and occupation. These elements in the causation of the disease have been fully dealt with by Deaderick and others. As regards Burma, the cases have been entirely, so far as I know, amongst Europeans and Indians, and these were chiefly young men, recently arrived. The majority of the former have been engaged in forest service exposed to severe malarial infection and physically run down by long marches in the hot sun or exposed to wet and damp. At Myitkyina the sepoy were heavily infected by malaria, and this disease accounted for about 80 per cent of the admissions to hospital before quinine prophylaxis was systematically enforced. During three years' residence at Myitkyina I never saw a single case of Black-water fever in a native Kachin, but I have reason to believe that the disease is known amongst them as "Ngak". From reliable information received by me, the disease is known to the Kachins in all parts of the Myitkyina District, and those who have been afflicted with the disease have always, previous to an attack, had a severe attack of malarial fever, and they say the fever passes away and is followed by "Ngak". The disease is regarded as very deadly, but is not very common. Some years it is said to be more prevalent than in other years, several cases occurring in one year and then no cases perhaps for a considerable time. Quinine is not known to these people in their native hills and so takes no part in the causation of the disease. No female of any race has been known to have suffered from the disease in Burma. The number of European, Gurkha and Indian

females is small in proportion to the number of males. Children also have been free of the disease. The cases that came under my personal treatment were first attacks, and, so far as I know, such was the case with all the others treated by other medical men except the case at Taungdwingyi, who had two attacks and in the second was treated by Dr Wells, Civil Surgeon, Magwe. Christophers and Bentley have laid great stress on the "human factor" in the permanent exaltation of malaria characteristic of certain areas. The tropical aggregation of labour camps and the attendant hardships appear to them to afford the explanation of the special and peculiar unhealthiness of the Duars. They say "It is this combination of factors and series of vicious cycles that is, we believe, responsible for the intensity attained by malaria wherever the undertaking of large projects in a malarious country involves the employment of numerous labourers and the establishment of labour camps." The construction of the Mu Valley Railway from Sagaing to Myitkyina, with a branch line to Katha, was commenced towards the end of 1889 and was completed in January 1898. The entire line is 347 miles in length. A large number of Indian coolies was employed. In the Myitkyina and Katha Districts the railway line passes through low-lying swampy areas, skirted by hills densely covered by virgin forests. Burman villages were few and far between. The opening of the railway has resulted in an increase of the population in this area and in the head-quarter towns and larger villages. Indians have settled in those places as shopkeepers, petty traders and railway employes. According to Daniels, imported Indians are about one-fourth as susceptible as Europeans. In the Myitkyina and Bhamo Districts, which are both on the frontier of China, there is from time to time an influx of Chinese who are said to be almost as susceptible as Whites. Manson says that many of the Chinese labourers on the Congo railway died of hæmoglobinuric fever. In the Myitkyina District, a large battalion of military police, consisting of some 1,400 Gurkhas, is maintained. The Myitkyina Gold Dredging Co was started about 1900, and about 30 Europeans were employed and some Indians. One European died of this disease about 18 months ago. It will thus be seen that there has been within the past 13 years in this district a great influx of people susceptible to malaria and unprotected by immunity. This human factor has probably resulted in an "exaltation of malaria," similar to what has taken place in the Duars, Assam and elsewhere in India. This factor also, no doubt, accounts for the incidence or increased prevalence of Black-water fever in the district. Deaderick says the accession of Europeans was influential in the history of

hæmoglobinuric fever in several ways by the increase of susceptible population, by the importation of quinine, and by the advent of physicians competent to recognize and to describe the disease. The first case recognized by me occurred at Myitkyina in 1899, the year after the railway line to Myitkyina was completed. Mention must also be made of the valuable teak forests in the Myitkyina, Bhamo and Katha Districts. These forests are worked under the supervision of Europeans in the service of certain companies. These men are much exposed to infection and some of these have suffered from Black-water fever. In the Ruby Mines District the Ruby Mines Company began work in 1889 and several Europeans were employed. In addition to the usual Government officials there are a large number of military police sepoy in all these districts and an European regiment at Bhamo. In considering the history of Black-water fever in Burma, this "human factor" has to be considered and given due weight.

The incidental or concomitant circumstances that may precipitate an attack of the disease are chiefly exposure to cold and damp and probably fatigue. Other occasional causes need not be referred to here. The use of quinine must, however, be mentioned. The rainfall may roughly be said to be about 90 inches. The temperature varies according to the elevation. In the winter months there is a decided fall in the temperature, and even on the plains Europeans require the comforts of a fireplace and a couple stout blankets. Warm clothing is essential.

4 PROPHYLAXIS

If malaria is the essential cause of Black-water fever, the prophylaxis of the former includes that of the latter disease. The bulk of the people in Burma have no knowledge of the value of quinine as a prophylactic agent. Even Europeans, the majority of whom have vague ideas on the subject, either take the drug spasmodically or not at all as a prophylactic. By such people, without medical advice, the drug is used in a haphazard way for the cure of an attack of malaria. Recently endeavours have been made to popularise the prophylactic use of the drug. The amount of sickness amongst military police sepoy in Upper Burma attracted attention and in 1908 definite steps were taken to adopt systematic anti-malarial measures. I was then Civil Surgeon at Myitkyina, and, in addition to insisting on the use of mosquito nets by all sepoy, each man was given, as far as practicable 10 grains of quinine sulphate in mixture on each of two successive days each week from May to December. The average total strength of the battalion at head-quarters and at the various outposts was about 1,400 men. The admissions for malarial fever are shewn below for four years,

in the former two years no prophylactic quinine was given, and in the latter two years it was issued in the dose stated above

	Indoor	Outdoor	Total
1906	1,602	3,372	4,974
1907	1,695	2,714	4,409
1908	328	200	528
1909	340	107	447

There was not only a great reduction in the number of cases of malarial fever, but also an improvement in the general health of the men, a modification in the severity of the attacks when these occurred, and a reduction in the number of cases exhibiting signs of malignant malaria. In previous years it was a common experience amongst outdoor patients to be asked to treat men who complained of headache, lassitude, loss of appetite, muscular pains, etc., which made them feel disinclined for work or any physical exercise. In 1908 and 1909 there was a marked reduction in these cases, which, in my opinion, were due to malarial infection, producing the feeling of malaise generally experienced by residents in malarious countries. There were, in other words, less men in the latter years who complained of feeling "off colour." In a big frontier battalion this improvement in the physical health of the men was a matter of considerable importance, but our feeling of satisfaction was marred by the unfortunate occurrence of four cases of Black-water fever within six months, the first case on 29th July 1908 and the 4th on 30th January 1909. Two cases recovered and two died. The question naturally arises as to what relationship, if any, quinine bore to the attacks. The history of each case would best enable us to consider the rôle of quinine in hæmoglobinuric fever as it occurred in the Myitkyina battalion.

A CASE OF SUPPURATING OVARIAN DERMOID CYST

By H. C. KEATES, M.D., B.A. (Lond.)

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THE following brief notes of an uncommon case may, perhaps, be of some interest to the readers of the *Indian Medical Gazette*—

Mussamat J., Hindu female, aged 35, was admitted into hospital at Jullundur on September 30th, for a suppurating sinus in the right iliac region. The patient was married and had had two children, the last being born ten years ago. She stated that the sinus had existed for two years.

On admission she was in a very weak and anæmic condition. The sinus was in the right iliac region in the position of MacBurney's spot. It was surrounded by unhealthy œdematous skin

and discharged watery pus and gas, with a distinctly fæcal odour. An indefinite tumour, the size of a cocoanut, was found occupying the right iliac and hypogastric regions, it was dull on percussion and fluctuation could not be obtained. Per vaginam, the uterus was retroverted and moveable, and pressed back by the tumour, which bulged into the anterior fornix. It was thought at first that the sinus might be the result of an old appendicular abscess, and that in all probability, on account of the escape of foul smelling gas, a fæcal fistula was present.

An operation was performed on October 1st. The sinus was opened up and the surrounding granulations and œdematous skin snipped away. A probe inserted into the sinus passed deeply down to the right side of the pelvis, on withdrawing it some had escaped with the discharge and it was immediately recognised that the tumour was a suppurating dermoid cyst.

After allowing the contents to escape freely the opening into the cyst was temporarily sutured, and the surrounding skin thoroughly cleansed. The abdominal incision was then enlarged upwards and downwards for a total length of six inches, and the cyst dissected out. It was adherent to the abdominal wall in front and to the omentum above. These adhesions were peeled off and the intestines protected by a roll of sterilised gauze. It was next discovered that the lower part of the cyst was adherent to the bladder. With some little difficulty and with the aid of a sound in the bladder these adhesions were separated and the cyst delivered through the abdominal incision. The cyst grew from the right ovary, and the right Fallopian tube was attached to its upper and inner border. It had a very broad pedicle composed of the whole of the broad ligament. The pedicle was ligatured in sections with interlocking catgut ligatures, and the cyst removed. The peritoneum was then sewn over the stump by a continuous fine Pagenstecher suture. The abdominal cavity was then thoroughly washed out with hot saline solution, and the abdominal wall closed with two layers of sutures, a continuous Pagenstecher for the peritoneum and an interrupted horse-hair for the muscles and skin. No drainage was employed.

The patient was in a very collapsed condition at the end of the operation, and liquor strychninæ m. vi and ether m. xx were injected.

The pulse remained very weak for several days after the operation. Three days after the operation a swelling appeared in the right iliac fossa. Per vaginam the right fornix was bulging and a distinct boggy swelling was found in this region. There was no fluctuation, however, and the swelling disappeared in a week. It was no doubt due to some cellulitis around the stump of the pedicle in the broad ligament.

Healing of the wound was delayed owing to the sloughing of the upper portion, and the deep suture came away.

This was scarcely to be wondered at, considering the initial infection of the skin with very foul pus.

Twenty-five days after the operation she was practically convalescent, with only a superficial granulating wound, and able to sit up. She had regained her colour and was putting on flesh rapidly.

I think it is remarkable that she did not develop septic peritonitis, as although every precaution was taken, still the wound must have been infected with the pus.

The cyst removed was of the size of a coconut and besides had contained a piece of skull bone covered with scalp, a piece of jaw bone with a well formed bicuspid tooth, two well-formed nipples, and an organ which looked something like a penis.

A Mirror of Hospital Practice.

CURE OF HYDROCELE BY LYMPHANGIO PLASTY* (INTERNAL DRAINAGE)

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THE object of this paper is to describe to you an operation for hydrocele which is based on rational principles inasmuch as it answers the various pathological conditions of the disease. The pathology and etiology of hydrocele has not as yet been satisfactorily determined. Still, before describing my operation I shall make an attempt at putting before you my ideas about its pathogenesis and etiology. Without this I may fail to interest you as to the rationale of my operation. I have purposely avoided the term "radical" as unnecessary, as I consider that an operative treatment for hydrocele meant to cure the condition should mean a radical cure. All other treatments which do not bring about a permanent cure may be designated as palliative or otherwise. By hydrocele I shall mean the common serous vaginal hydrocele, vaginal serositis and other similar terms have been applied to it. So this excludes hydrocele with blood in the effusion (hydrohæmatocele) with chyle (chylocele), with pus or suppurating hydrocele and other conditions.

Pathology and Pathological Anatomy—Embryologically the tunica vaginalis is derived from the upper peritoneum. This part of the

peritoneum has greater absorptive powers than the lower peritoneum and advantage of this is taken in cases of septic peritonitis by maintaining Fowler's position. Tunica vaginalis resembles in appearance and structure the peritoneum from which it is derived. It is composed of fibrous tissues containing elastic fibres and covered over on the apposed surfaces by flattened endothelial cells in the interstices of which lymph channels end (Dixon). We may presume that this membrane (tunica vaginalis) retains the absorptive functions of the peritoneum. The cavity of the tunica vaginalis is a serous cavity which forms a large lymph-sinus or widening of the lymph-capillary system with which it communicates (Halliburton). Tunica vaginalis of hydrocele loses much of its absorptive functions by certain pathological changes which it undergoes, viz, fibrous, fatty, calcareous, etc. This is deposited in a diffuse manner or in plaques both over the parietal and visceral layers. Dr T Sur, Clinical Bacteriologist and Pathologist, Campbell Medical School, has kindly examined several sections of hydrocele sacs for me. These show that the changes commence by a loss of the endothelial lining. I have put before you several copies of Dr Sur's report kindly lent by him. The visceral layer of the membrane is deficient in three situations. Superiorly at the attachment of the globus major, inferiorly at the globus minor and posteriorly where the vessels and nerves enter the testicle from the spermatic cord (Dixon). I have observed that in a large percentage of hydroceles there is marked congestion at one or more of these sites, and I am sure other operators have made the same observations.

Like the peritoneal cavity, the cavity of the tunica vaginalis is a potential one and contains a small amount of fluid which has a double utility. Part of it is utilised for nutritional purposes and a very small and fairly constant quantity is retained as a lubricant for protective purposes. An occasional increase in the quantity is returned by the veins and lymphatics. When this balance (which may be called serotaxis) is disturbed by an increase in outpour or decrease in intake, there is an accumulation of fluid in the sac—a hydrocele results.

The Process of Transudation—The fluid of hydrocele is serous in character, contains about 6 per cent or less of albumen and a small quantity of fibrinogen—sp gr 1015 to 1025. In old-standing cases cholestrin can be found. Sometimes loose fibrinous bodies may be present (Thomson & Myles and Rose & Careless). In hydroceles with tubercular or malignant diseases of the testicle other cells like lymphocytes, blood-cells, etc., may be present. This compares favourably with ascitic fluid according to Dickinson's tabulation. The process by which the fluid transpires is open to discussion. Other

* Paper read before the Medical Section of the Asiatic Society of Bengal at the December meeting.

substances can escape by dialysis, but the presence of protein constituent suggests that it transpires by pressure, by secretion or by both. The source of increased exudation is the capillaries and the sources of absorption are the lymphatics and veins. So if we take into account the inflammator and traumatic origin of hydrocele—a condition of serositis, we think of the first factor, *viz*, increased exudation from the capillaries—from those in the membrane itself and more from those in the three situations where it is deficient. If, on the other hand, it is supposed that hydrocele is caused by some deficiency in absorption—the lymphatics and veins are at fault. Those facts hold good for other conditions such as œdema, ascites, etc., as stated by Dickinson. This author refers to experiments by Lower and Cohnheim. It is also possible that the vessel walls undergo changes which increase their permeability facilitating transudation. Lazarus Barlow lends support to this. Ziegler and others have also explained this process. In support of venous obstruction as a contributing cause for hydrocele may be mentioned the occurrence of hydrocele after operations for varicocele as described by Priestly Leech.

Along with this we may consider Corner's statement with regard to hydroceles in the elderly in whom it appears at the time of involution. During this period the spermatic artery undergoes changes, *viz*, senile thickening and partial obliteration. The spermatic vein wants a certain amount of *vis-a-tergo* from the spermatic artery through the testicle. If in the above condition this force is deficient, it causes venous engorgement of the testicle and tunica and consequent transudation.

Again, it has been suggested that hydrocele is common during or after puberty which age calls for a more liberal supply of blood to the testicles. If at this age, for reasons which I shall describe later, there be any obstruction in the spermatic plexus of veins, there is congestion due to increased supply and diminished return of blood, giving rise to hydrocele. Quincke has observed as quoted by Ziegler that ascites may make its appearance in gulls about the time of puberty without apparent cause, disappearing as soon as menstruation is established. This I mention as it may be interesting in connection with the above.

Hydrocele and Ascites—Vaginal hydrocele has a close analogy to ascites or better termed hydro-peritoneum. In both cases there is accumulation of fluid in the respective cavities. The histological structure of the membranes are similar. The ultimate process by which the fluid transpires I have tried to show to be similar, and the chemical characters of the fluid are fairly similar. As a matter of fact, in the congenital type of hydrocele with a patent funicular process there

may be a state of hydro-peritoneum of one cavity communicating with hydrocele of the other cavity. Starling has shown that if fluid be injected into subcutaneous tissues of an animal's leg, obstruction or occlusion of the veins may be produced. The rise and pressure thus produced in the capillaries tend in their turn to increase the transudation of fluid and aggravate the dropsy and thus a viscous circle is set up. Apply this to the case of serous effusion where lymphatics are obstructed. The indication for cure of such conditions is by internal drainage of the fluid by establishing new lymph channels and thus relieving the pressure on the veins, and the veins thus relieved of pressure will in their turn accelerate the process of cure.

Some factors supposed to be concerned in the etiology of hydrocele. It has yet to be shown what conditions give rise to the ultimate pathological changes as stated above, giving rise to hydrocele. I shall begin by enumerating briefly the causes which have from time to time been put forward as etiological factors of hydrocele.

Filaria and in this connection a lunar relationship has been mentioned. This as a general statement can hardly be accepted. In but a few cases have *filaria* been demonstrated. Hydrocele in temperate climates cannot be associated with *filaria*. Hydroceles associated with *filaria* are generally chyloceles which I have excluded from this paper.

Trauma has already been referred to with the remark that it eventually leads to the pathological conditions described. There are many cases of hydrocele without any history of trauma.

Epididymitis and orchitis of specific origin (tubercle, syphilis, gonorrhœa) may give rise to hydrocele. Some will be cured by specific treatment without operation and for the rest lymphangioplasty will be the curative treatment.

Bacterial infection of a mild or attenuated type. As far as is known, it has not been possible to make cultures from hydrocele fluid bacteriologically. The fluid has been injected into different parts of the hydrocele patient without any constitutional symptoms. Some experiments are cited to disprove this view (*vide infra*).

I shall now put before you a few questions which have occurred to me in this connection. Hydrocele is a disease common in the tropics. Has it then a causal relationship to the Eastern mode of living and dressing, or what climatic influences may there be to predispose the Orientals to that disease? In answer to this I have thought of a few facts.

Pendulous Scrotum—The tropical scrotum is unduly lax and pendulous. It is a common observation for those who have inherited a pendulous scrotum that they are much more so during the hot months, and those who have been to Europe must have noticed the alteration in shape

and contour of the scrotum while there Rose and Careless have observed that in their text-book such scroti lend little support to the testicles and the cord is being dragged upon by its weight

The remedy is a worse evil,—to support the testicles, these sufferers have got into a pernicious habit of unduly tightening up the scrotum by “lungotis,” a form of suspensory bandage In this the people overdo The scrotum and testicle are folded up on the pubo-inguinal region, and the “lungoti” applied with an unusual amount of tightness This constricts the neck of the scrotum and kinks up the cord thus pressing on the vessels The venous plexus is more easily and more completely occluded than the artery, and the consequence is venous congestion and exudation

Certain postures which people assume—squatting down at meals—testicles are less supported then, such postural effects refer to other occasions in the daily routine of life In certain postures there is pressure on the inguinal region This fact has been referred to by certain surgeons (McGavin among them, I believe) to explain the less frequency of hernia in the Orientals

Early attainment of puberty and the comparatively unwholesome surroundings in which boys live may be mentioned with reference to the occurrence of hydrocele at this age already referred to Eastern dietary may have something to do

The Operation—The patient is prepared in the ordinary way The part is shaved and cleaned on the previous day, when dry, pure Tr Iodine is painted and covered when dry with sterile gauze and bandage On the operation table another application of Tr Iodine is made A medium sized trocar and cannula is used Hydrocele tapped anteriorly a little lower than the middle of the swelling A strong flexible probe or needle is threaded with 12 or 24 inches of three or four fold of No 10 or 12 tubular silk This is introduced into the sac through the cannula, made to pierce the tunica vaginalis and (as far as can be estimated) infundibuliform fascia f transv) cremasteric fascia (int obl) intercolumnar fascia (ext obl) and dartos and made to insinuate between dartos and the skin of the scrotum and led upwards towards the inguinal region Half way to Poupart's ligament the needle is brought out through the skin and re-introduced and led to the inguinal region where it is made to emerge The silk is then pulled through by the needle and if necessary with the help of a pair of forceps, and the end hanging out of the cannula is introduced for a fair length into the sac, and the scrotum so manipulated that the four ends of silk spread out inside the sac The inguinal end of the silk is pulled up and cut short so that the cut end sinks deep under the skin The punctures are sealed with collodion and so a light

dressing applied The silk is bismuthised and gloved hands are used on the hands after a complete course of cleaning are dried and painted with tincture of iodine

After Treatment—Rest with support of scrotum on a bracket for three days and then patient is allowed up with the scrotum supported

The Rationale of the Operation—It is based on the principle of internal drainage of the serous cavity by the capillary action of the silk threads which act like artificial lymph-channels I have drawn the idea from Mr Sampson Handley's Hunterian Lecture, 1910, on Surgery of the Lymphatic System, where he describes an operative treatment for ascites by “internal drainage by silk threads” His operation of lymphangioplasty for lymphatic oedema is on a similar principle As far as I know he has published one case with successful results for ascites but I have heard he has done more since

A short resume of the various operations for hydrocele may be made—

1 *Simple withdrawal of fluid by Tapping*—This does not give a “radical cure” except in very rare cases

2 J Newman records six successful cases by partially withdrawing the fluid by a trocar and cannula, and leaving the cannula with its end at higher level in the sac for two days There is no record of this operation in later literature This is open to the grave objection of exposure to sepsis from the scrotum through the cannula

3 *Tapping and Washing out or injection*—Carbolic water, iodine, zinc chloride sol perchloride of mercury sol and adrenalin chloride sol have all been tried Many are attended with untoward or uncertain results I know of a case in which severe poisoning was seen With iodine severe inflammation has been caused The names of Pilate, Vessemann, Millar, Fleux are associated with these

4 *Simple incision (Volkman's)*—Tedious and open to septic infection

5 Eversion of the sac known as Platt's or Jaboulay's operation, common If done without stretching up the everted sac it is called Andrew's bottle operation

6 Bergmann's excision of the sac

The last two have good results, but they are not so simple as internal drainage, take longer time and need general anaesthesia Patients have to keep in bed longer Besides, these disturb the normal relations The normal covering of the testicle is removed

7 Injection of catgut ligature into the sac (Van Schaick's operation) after tapping With this the old-standing objection to catgut remains A foreign body is introduced with the sole object of causing inflammation Might not this inflammation go further than is for the patient's good

8 Tapping and injection of a small quantity of the fluid into another part of the body This would be an ideal operation if it was proved that the fluid had toxic properties I am thankful to Major Newman, M D I M S, for allowing me to quote two cases which he treated in this line In neither of these cases was reaction general or local noticed, and one patient returned with a hydrocele as large as before and Pratt's operation was then done If at any time it is proved that hydrocele fluid has toxic properties, the "internal drainage" operation shall have a double support Some good results are recorded by injection of ascitic and pleuritic fluids, but they are known to be toxic and it does not therefore apply to hydrocele

I have attempted to culture agar slopes with hydrocele fluid on several occasions and I have failed

In two cases the fluid was injected subcutaneously into guinea-pigs without any effect on them I place before you Dr Sur's returns for these The guinea-pigs are still alive and well

The operation by internal drainage for the cure of hydrocele is simple, and when it is performed after proper diagnosis of the case and with perfect aseptic precautions the results are as assuring to the surgeon as they are gratifying to the patient The principle of internal drainage has been so fully and forcibly explained by Mr Handley that it will be a presumption on my part to say more It is planned on a rational basis It starts by stopping the vicious current of Stalling and cures the disease by a sure and steady process General anaesthesia is not necessary I have performed most of the operations by local anaesthesia The operation is almost as simple as simple tapping though the result is as good as the so-called radical cure In conclusion, may I venture to hope that in consideration of the various advantages of the operation and of the fact that Indian patients are so averse to general anaesthesia that it will appeal to you, and those among you who are so inclined will try this method

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A CASE OF MULTIPLE CYSTICERCUS CELLULOSÆ

By T V CAMPBELL, M B, C M,

AND

T T THOMSON, M B, B Ch,

London Mission Hospital, Jammalamadagu, Madras
 Presidency

In the June number of the *Indian Medical Gazette*, a case of multiple cysticercus cellulosa is reported from Madras General Hospital by Dr T S Thumuthi who mentions that previously only three cases of infection with cysticercus cellulosa have been recorded in India Considering the rarity of this infection we venture to record the following case —

Chenappa, aged 45, male, Hindu—a native of Cuddapah district—was admitted to the London Mission Hospital, Jammalamadagu on December 12th, 1907

History—About six years ago patient noticed a small tumour over his left eyebrow, later another to left side of nose, still later on neck and all over the body



For one year before admission patient had had a cough with purulent sputum and irregular fever

On admission—The patient was admitted for his chest condition On examination of his chest we found extensive tubercular disease of both lungs

His sputum contained numerous tubercle bacilli His face and body presented a remarkable appearance Numerous small subcutaneous tumours could be seen, particularly about the neck and chest part of back, shoulders, upper and fore arms and thighs, in the pectoral muscles on both sides the tumours were very numerous The tumours were freely moveable, and felt firm and were about the size of a large grape

The patient gradually got worse and after a severe attack of diarrhoea died on January 19th

Post mortem examination—Numerous cysts were found subcutaneously all over the back and part of chest and

abdominal wall, also over the deltoids and in upper and fore arms and thighs, a few were found in the neck and face. Numerous intra muscular cysts were found in the pectoral muscles.

Thorax—The right lung was very adherent to the chest wall all round, the left at the apex. There was tubercular thickening of both apices and an abscess in the right apex. No cysts were found in the lungs.

On the surface of the heart two small cysts were found, one on the interventricular septum and the other on the left ventricle near the apex.

In the left kidney there were three cysts, one on the convex and two others on the inner border.

One cyst was found near the hilum of the spleen, no other cysts were found in the abdominal cavity. The cranial cavity was not examined.

The patient had not allowed us to remove a cyst for examination, so a positive diagnosis of cysticercus cellulosus was not made till he died.

When we examined the contents of one of the cysts under the microscope, the head of a tapeworm with a rostellum consisting of two rows of hooklets could be seen.

The pectoral muscles containing numerous cysts were sent to Dr J W W Stephens, of the Liverpool Tropical School, who has very kindly allowed us to make use of his report which was published in the *Annual of Tropical Medicine and Parasitology*, Vol II, No 5, May, 1909, Liverpool.

Dr Stephens reports as follows—

In May, 1908, Drs Campbell and Thomson, of Jamalamadagu, Madras, kindly presented to the museum a specimen of *Cysticercus cellulosus* in the pectoral muscle of man. The size of the connective tissue capsules of the cysts varied from 15.21 mm long by 8.10 mm broad (fig 1). Recently I proceeded to examine a scolex extracted from its bladder with a view to making certain of the diagnosis. I was surprised accordingly, on examining a specimen, to find only sixteen hooklets instead of twenty-two to thirty-two, which is the number given by various authorities as comprising the limits of variation. It was possible that one circle of hooklets was absent, but on measuring, this explanation, taken also in connection with what will appear later, is hardly possible.

1 *Pectoral cysticercus* (fig 2) Sixteen hooklets. The size of the hooks varied from 108.0(?) μ —144.0 μ . As will be seen from the appended protocols, there was no sharp demarcation between small and large hooks, but hooklets of various sizes also occurred, e.g., 126.6 μ , 129.6 μ , 133.2 μ , 136.8 μ .

2 *Pectoral cysticercus*—Twenty-one hooklets found. The range of variation was in this case greater, viz., from 104.4—122.4 μ for what might be called small hooks, and from 154.8—165.0 μ for the large.

3 *Pectoral cysticercus*—Hooklets twenty. Only a few hooks were measured, three small, varying from 108.0—111.6 μ , and five large, varying from 144.0—161.2 μ .

4 *Pectoral cysticercus*—Twenty hooklets. In this case, as in case No 1, it is hardly possible to separate hooks into a large and small series, as hooks of an intermediate size occur. Thus hooks of the following sizes were measured 122.5, 129.5, 133.0, 140, 143.5, 147.0, 165.0, 153.5 μ .

I next examined a specimen of *O. cellulosus* from the brain and a specimen from the tongue, both from natives of Madras and presented to the museum by Major Williams, I.M.S., and compared them with the hooks of *T. solium* in man and *C. cellulosus* from the pig.

5 *Brain cysticercus* (fig 3) Hooklets twenty-eight. The 'small' range from 104.6—118.8 μ , the 'large' from 151.2—162.0 μ , so that there is a fairly well marked line of separation.

6 *Tongue cysticercus* (fig 4) One month's duration. Hooklets twenty-two (two missing). The small range from 108.0—122.4 μ . The large from 140.4—151.2 μ . The range of variation is not so great, nor is the line of

separation between the small and large so marked as in the brain cysticercus.

7. *Pig muscle cysticercus*—Twenty-five hooklets found. Ten hooklets were measured. The size of the small was constant, viz., 126 μ . That of the large was also constant, viz., 175 μ , so that separation between large and small was quite distinct.

8. *T. solium*—Twenty-five hooklets were found. Eighteen of these were measured. The small range from 115.2—140.4 μ and the large from 183.6—187.2 μ , so that the line of separation is again distinct, though it is noticeable that the size of the hooklets is distinctly larger than in the case of the cysticercus in the pig's muscle.

It would appear, therefore, from these observations that in *C. cellulosus* in man there is an irregularity of development affecting both the number of the hooklets and, more especially, their size.

THE TREATMENT OF SPRAINS, STRAINS AND RUPTURE OF MUSCLES BY STRAPPING, MOVEMENT AND RUBBING

By C P O SHUNKER,

Military Assistant Surgeon

As the occurrence of sprains and contusions of muscles, tendons, or ligaments is exceedingly common in every-day hospital practice, especially in the military department, I would like to call attention to the fact that the principles of treating such injuries, as laid down by Dr Wharton Hood in his book, "The Immediate Treatment of Injuries," has not, in this country at any rate, received the attention that it undoubtedly merits.

During the last two years, the methods advocated by Dr Hood have been followed in every case of sprain or rupture of muscles and ligaments occurring at the Cavalry School at Saugor, where owing to the training and manipulation of young horses (remounts) this class of injury has been very common.

I would first mention the treatment that is usually employed in these cases and compare it with that tried by us.

As a rule, the part sprained or the muscle ruptured,* is immediately placed at rest and with this end in view, the limb, if of the upper extremity, is put into splints or a sling or both, or if the lower extremity is the part affected, the patient is put to bed with the limb placed on a McIntyre or back splint. Ice, fomentations, lead lotion, evaporating lotion, etc., are the remedies usually employed to reduce the attendant inflammation and swelling and after these have subsided, movement is only permitted with the greatest caution—with this method of treatment inflammation and swelling subside in a week or ten days and in some cases even longer.

Suppose for example the ankle has been sprained, after the inflammation and swelling have subsided by the application of antiphlogistic remedies, the patient will more or less rest the limb as much as possible to avoid pain by movement.

* Provided there is no division of the skin

Movement which will bring the injured joint or muscles into action is avoided because it hurts him and in this way the whole limb is restricted generally. In a short time, the muscles, owing to disuse, begin to waste, and it will be found that the circumference of the limb undergoes diminution. Thus weakness and stiffness are allowed to go on until the condition eventually rights itself by use, taking months and even years to do so, while in a good few cases, stiff joints or weakened muscles is the result, which resists treatment and leaves the patient permanently affected.

With us, on the other hand, the part affected is strapped as soon as it comes under our notice, by figures of 8 strips of rubber or adhesive plaster $\frac{1}{2}$ " to $1\frac{1}{2}$ " in width, according to whether the muscles or joints injured are large or small, the narrow strips for the smaller joints and muscles, the broad strips for the larger. In the Army, Lesly's 1" tape plaster answers very well.

The plaster is applied in the following manner—Take a strip of the plaster and begin from the distal end of the joint or muscle injured by figures of 8 till the whole of the affected part is covered by the strapping. For example, say, the knee-joint has been sprained by a sudden muscular effort in an unexpected direction, a strip of the plaster is made to encircle the limb an inch below the tubercle of the tibia, a second strip partially overlapping the first and so on till the strapping is taken over the condyles of the femur.

Care should be taken that the plaster is not applied so tightly as to obstruct the circulation of the part or so loosely as not to give the parts support. The best way to hit this off is to allow the plaster to just fit over the skin at all parts. It should be noted also that in order to avoid irritation of the skin and pain when the strapping has to be removed, hair over the part to be strapped should be first shaved off.

The patient is then told to *use the limb* and to make such movements as will bring the injured muscles into action and exercise the joint. No fomentations, evaporating lotions, etc., are necessary. The strapping is removed on the third day or earlier, if it gets loose, which will occur as the inflammation and swelling subside. The part is then rubbed, beginning at the proximal end of the area affected and gradually working lower and lower till the whole injured part is treated in this way, our endeavour being to empty the joint or muscles injured of any extravasated blood or the accumulated products of inflammation. The "rubbing" is at first carried out with gentleness, using only the palmar surfaces of the fingers and as comfort in the limb is experienced, a firmer application of the hand will be welcomed. The "rubbing" is carried out for about ten minutes, and if a joint is implicated, it is moved in its normal directions. Fresh strapping is again applied in the same manner and renewed if

necessary after three days. Rarely has it been necessary to apply the strapping more than four times, three applications generally sufficing.

The advantages claimed for this treatment are—

(1) That the patient is relieved of a good deal of pain and confinement,

(2) That the possibility of the occurrence of stiff joints and weakened muscles, tendons or ligaments, a common sequelæ of the "rest," treatment of sprains, etc., is entirely avoided and

(3) That a very much more rapid recovery is effected and therefore a quicker return to work ensured.

In many of our cases, the relief of pain, the speedy recovery and the absence of stiff joints and weakened muscles, were marked features.

Besides the treatment of fresh injuries by the above method, we have had the opportunity of treating many cases of old, standing weakness of muscles and stiffened joints, where, owing to early faulty treatment by prolonged rest, etc., the joints have been allowed to get stiff or the muscles very much weakened. In these cases we have broken down the adhesions, strapped and used the limb, while in the case of weakened muscles, the battery rubbing and the application of strapping have effected a cure.

I append a synopsis of the various kinds of sprains, etc., that have been treated in the manner I have just described, and I can confidently say that we (at the Cavalry School) have been more than satisfied with the results obtained, and I trust that those who will give this treatment a fair trial will find it a great advance on the "rest" treatment so generally employed in this class of injuries.

Sprain wrist	22 Riders strain with rupture of adductor muscle	3
Sprain ankle	17 Sprain knee (with synovitis)	13
Riders strain	13 Sprains and strains of small joints of hand and foot	31

In conclusion, I have to thank Captain O Berkeley-Hill, I.M.S., Medical Officer, Cavalry School, Saugor, for his great kindness in bringing this treatment to my notice, for his constant help and advice, and for permission to publish this note.

HISTORY OF A CASE OF "MYOSITIS OSSIFICANS"

By C. A. NANJAPA,

Resident Medical Officer, Victoria Hospital Bangalore

Name	Krishna
Age	25 years
Sex	Male
Place of birth and residence	Bangalore City
Caste	Hindoo
Disease	(Imbecility, myositis ossificans)
Admitted on	16th September 1907
Died on	5th July 1910

It would appear that the patient, when he was a boy of 6 or 7 years of age, suffered from fever

for nearly three months and for six months afterwards he was convalescent, not able to get up and walk about freely. As he gained strength gradually, the parents found some "lumps" appearing over the back of the neck and chest. However, he was not allowed to remain quiet at home, he was sent for feeding cattle. Gradually he showed signs of inability to stand erect and walk freely. At the same time, he began to laugh for no reason and talk to himself. At times he used to be disobedient to his mother. As he grew up in age, he showed greater weakness in his mental condition. He continued to feed the cattle for about five years or so, and afterwards on account of his crippled condition, he was not going out at all. He did not show sufficient intelligence from his infancy. He was born with short fingers and toes. He commenced to talk late and he was not able to have a connected discourse afterwards. As there was none to look after him, he was sent to the Incurable Wards in 1907.

The foregoing history is very vague, and the sequence of events cannot be elicited from the patient's elder brother, who, it would appear, was not living with the patient. His disease having been wrongly diagnosed, he was transferred to the Leprosy Asylum. There he was not found to be suffering from leprosy, but on account of his mental weakness, he was transferred to the Lunatic Asylum on 16th September 1907.

Condition of the Patient

Patient can sit and stand in a crooked position and walk with a limping gait. Right forearm permanently fixed to the arm by bony buttresses at a right angle, and the left forearm is fairly moveable, but do not possess full extension. Neck stiff, but head fixed with a deflection to the left side.

Almost all the voluntary muscles of the body present in a slight or greater degree of ossification, either at their attachments to the bone, or at their bellies or throughout.

The most marked of the change is presented by the trapezius and the erectors spinae, which has produced bony ridges extending from the sub-occipital to the lumbar region, and the bony tumours at the origin of the spines of the scapula and the inferior angle of the right scapula.

The next marked one is presented in the left pectoralis major muscle which has produced two bony ridges one transverse along the sternal origin of fibres meeting at their outer ends to form an angle which is loosely connected to the humeral insertion of the fibres by bony spicule. Bony ridges along the posterior margin of the right deltoid extending to the insertion and attached to the humerus.

The muscular position of the right supinator longus is transformed into osseous tissue, which runs like buttress from the external aspect of the humerus to the radial aspect of the forearm producing the permanent feature referred to above.

Bony prominences are seen in the left arm in the front and behind corresponding to the flexors and extensors. The right lower extremity, the left leg and the skull are the only regions which do present the osseous growth.

The left thigh is remarkable for the moveable plates of bones in the region of quadriceps extensor.



adductor longus and the hamstrings occupying almost the whole of their bellies.

Speech is good, only affected by the incomplete lockjaw due to the stiffness of the muscles.

About eight months prior to his death which took place on 5th July 1910, the patient began to lose flesh and strength. The joints of the limbs began to be fixed more firmly, so that he was neither able to use his limbs nor able to turn from side to side.

The osseous growth became very prominent and then outlines quite distinct, ultimately he was attacked with dysentery and died.

Indian Medical Gazette

NEW MEDICAL JOURNALS

THERE was a time when the number of Medical Journals devoted to diseases in and of the Tropics were few and far between—in fact for many years the *Indian Medical Gazette* was the one and only record of work done in this branch of medicine.

The case is far otherwise nowadays. A dozen years ago appeared the *Journal of Tropical Medicine*, later came the establishment of the schools of Tropical Medicine in London, Liverpool and elsewhere. The Liverpool School was soon to the front in publishing its well-known *Annals*, and the series of monographs produced by this school rank in importance only second to the great series of *Scientific Memoirs* of the Medical and Sanitary Departments of the Government of India.

The Society of Tropical Medicine and Hygiene now publish their *Bulletin*, the United Service Medical Society does the same. The Sleeping Sickness Bureau launches regularly its monthly number, more recently there has appeared a *Yellow Fever Bulletin* hailing from Liverpool, and still more recently the *Kala-Azar Bulletin* ably collates all the work which is being done over a wide area in Africa and Southern Europe on this disease once thought to be a denizen of Assam alone. Our readers know of the recent appearance of *Paludism*, designed to make known the work which is being done in India, which at last has been recognised as we may gather from a recent pronouncement of the *British Medical Journal* that "a new Sanitary era had dawned in India."

On our table to-day lie the first copies of two more new journals, both of which will certainly interest our readers, the one is *The Journal of Vaccine Therapy*,* edited by Dr R. W. Allen, in order to afford a medium for communicating to the profession the work done in this important and special branch of the healing art. The first issue contains an excellent article by Dr R. J. M. Buchanan on the pathogenesis and treatment of rheumatic fever, another by Dr Sadler on vaccine treatment of typhoid fever and a very practical article on the vaccine treatment of

Acne by the Editor Dr Allen. This journal will certainly prove useful to all interested in this work.

The last journal* we have to notice is one that concerns us more nearly, as so many of our readers make use of this school for postgraduate work during study-leave. The veteran Sir P. Manson is the Editor, and it is proposed that the journal shall largely consist of original papers and also summaries of selected papers not readily accessible in the tropics. Each section will be under a sectional Editor. Sir Patrick Manson is assisted by Dr C. W. Daniels, and has as sectional Editors Lt-Col A. Alcock, I.M.S. (retd), C.I.E., R.S., whose valuable book on *Entomology for Medical Officers*,† we have received and will fully notice in our next number, Dr Tanner Hewlett, Dr Leiper, Mr H. B. Newham and Mr C. E. Wenyon.

The first number is excellent and after a "Foreword" by Sir P. Manson contains a critical résumé of recent publications relating to Medical Entomology by Lt-Col Alcock, a Review of recent literature of Helminthology by Dr Leiper. His article on a method for dealing with wells infected with guinea-worms will be separately noticed.

Mr Newham discusses the question of flies as leprosy carriers, an important matter now that the infectivity of leprosy is again accepted. Dr Bayon's paper on Acid-fast germs from leprosy cases we have already fully noticed. Dr Wise of British Guiana, has a practical note on the treatment of leprosy and Dr Daniels writes of cases of trypanosomiasis treated, in London.

A case of "malarial" neuritis, with notes by Major J. B. Smith, I.M.S., is worth reading.

Altogether the first issue is an excellent one and as the oldest of the "Tropical" Medical Journals we offer our hearty congratulations to the latest recruit.

Current Topics

KING GEORGE'S MEDICAL COLLEGE, LUCKNOW

THE Rules for the guidance of candidates seeking admission to King George's Medical College have been published.

* Journal of London School of Tropical Medicine. London: Taylor and Francis, Fleet Street, E. Price, 3s. 01 7s. 6d. per ann.

† Entomology for Medical Officers. A. Alcock. Price, 8s. net. London: Gurney and Jackson.

Applicants must produce the following certificates (1) of having passed the Preliminary Scientific Examination for M B and B S of Allahabad University, or the examination for B Sc with chemistry, physics and biology or, if a resident of the territorial jurisdiction of Allahabad University, any of the following certificates —

(a) The Intermediate Examination of the Punjab University taking Biology as an elective subject and the additional test in Chemistry prescribed under Regulation 12 of the Intermediate Examination of the Science Faculty of the Punjab University, or

(b) An equivalent examination of the Universities of Calcutta, Madras or Bombay, or

(c) The examination for the degree of Bachelor of Science in Chemistry, Physics and Biology of the Universities of Calcutta, Madras, Bombay or the Punjab

The possession of such a certificate does not of itself confer a right of admission to the College, and the Principal has the power of making a selection from among the candidates for admission. The students are to live in the College hostel unless specially exempted by the Principal.

The curriculum extends to five College years or sessions of three terms each, the only real vacation being from 15th June to the 18th October.

Anatomy and Physiology, lectures and practical work occupy the first year, Materia Medica, Anatomy, Physiology, Histology and Physiological Chemistry and Pharmacy occupy the second year, and the "first M B" takes place at the end of the second year.

In the third year Medicine, Surgery, Pathology and hospital work, with Bacteriology begin, and the course of study for the 4th and 5th year will be announced in and future prospectus.

There are several valuable scholarships attached to the school, and further information is obtainable from the Principal, Major W Selby, I M S.

THE TRANSMISSION OF GOITRE

CAPT R MCCARRISON, I M S, continued his valuable experiments on the transmission of goitre from man to animals, and the results are published in the *Annals of Tropical Medicine* (December 30, 1911). We quote herewith Captain McCarrison's results —

"If the results of these four experiments are compared, several broad differences will be noted —

(1) In those animals which drank only highly faecal polluted water for over three months there was a tendency on the part of the thyroid gland to be larger than normal (3 cases out of 7).

(2) In those animals which were fed on cultures of bacteria from the intestines of goitrous individuals there was a tendency on the part of the thyroid gland to be smaller than normal, and these tendency appears to be well marked (5 cases out of 7). The diminution in

size of the thyroid of these animals appears also to be associated with an increase in their body weight.

(3) In those animals which drank a highly faecal polluted water the histological appearances of the gland either differed in no essential from normal, or there was evidence of an increase in size of the vesicles, of irregularity in their shape, of a higher type of epithelium lining the vesicle, and of a total increase in the amount of colloid present.

(4) In those animals which were fed on cultures of bacteria from the intestines of goitrous individuals, a marked tendency to hyperplasia was observed. The cells lining the vesicles were in a large proportion of the cases columnar in type, colloid was scanty, and there was evidence of an increase in the connective tissue stroma of the organ. In one case the stroma was so markedly increased, and the cells so altered as to give rise to the suggestion of commencing myxœdema.

(5) A slight hyperplasia was also observed in one of two goats to which only carbonates of magnesium, lime and sodium had been given.

It appears, therefore, that a considerable hyperplasia of the thyroid gland may occur under various conditions, as it is present in one or more cases in each of the foregoing experiments. But so marked are the histological changes in some of the thyroid glands of the goats of experiments, B and C, and so striking is the contrast between them and the glands of normal animals, and of the goats of the other experiments A and D, that one is led to attribute these changes to the action of the bacteria administered. The cases are however, too few to admit of more than this general conclusion being drawn, and this conclusion must be subjected to the test of further experiment on a much larger number of animals than were employed in the present instance.

The results of feeding goats on faecal polluted water was in the present series not so marked as in my former experiment. But here also three goats out of seven showed an enlargement of the thyroid gland, as determined by weight. The structure of these glands, however, did not show the same degree of dilatation and distension of the vesicles with colloid, nor was the thinning and irregularity of the walls of the vesicles so marked, or the epithelial lining so flattened as in the thyroid glands of the goats of my first series of experiments. The results, nevertheless, are on the whole similar to those obtained in my former experiments."

ANKYLOSTOMIASIS IN TAMIL COOLIES

In the *Malaya Medical Journal* (January 1912), there appears a useful article by Dr T S Macaulay on the health of Southern India coolies working on the rubber estates of Selangor. In addition to other diseases Dr Macaulay found that, 59.9, say 60 per cent of 1,000 coolies examined were infected by the hook-worm. Children, 120 examined, were found to be somewhat less infected, but male and female adult coolies suffered practically equally.

As might be expected many double and triple infections were found.

Out of 1,000 coolies examined—

548 or 54.8%	harboured	<i>Ascaris Lumbricoides</i>
178 or 17.8%	"	<i>Trichocephalus dispar</i>
48 or 4.8%	"	Larvæ of <i>Strongyloides stercoralis</i>
9 or .9%	"	<i>Oxyuris vermicularis</i>
3 or .3%	"	<i>Balantidium coli</i>
1 or .1%	"	<i>Cucumonas</i>
1 or .1%	"	<i>Fasciolopsis buski</i>

The average number of worms found per coolie was only 37, but the actual numbers varied from 1 to 531 found, a high degree of

infection therefore was not found. The Necator worm was for the most frequently found, 90.6 per cent against ankylostome, 9.3 in 1,600 cases. This is worth noting as hitherto, the ankylostoma duodenale was considered to be the ordinary worm found in India. Dr. Macaulay gives 50 per cent of infections to be Necator infection only, 47 per cent ankylostomes and 45.3 per cent mixed, *ie.* both.

As regards the site of the worm he writes as follows —

"The largest number of hookworms is found in the upper part of jejunum, they decrease in numbers in lower portion of the bowel, until the ileum is reached where they are scanty. In a few cases one or two may be noted in the stomach (one case four), and large number may be seen in the duodenum extending to jejunum and even to ileum. In the large bowel, as a rule, none are obtained except a few dead ones on their way to the exterior, especially, if thymol or betanaphthol has previously been given. The worm is fixed to the mucosa for some hours after death when it can be picked off alive, later they can be found among the mucus or contents of the bowel."

The point raised above as to the relative prevalence of Necator or Ankylostoma duodenale in India is worth further inquiry. Dr. Turner has shown the combined prevalence of both worms in South Africa.

THE following table of differentiation is quoted by Balfour (*Wellcome Lab Report*, 2nd Review, 1911, p. 12), and is here given as a guide to investigators, it was compiled by Byrd of Florida —

NECATOR AMERICANUS	UNCINARIA DUODENALIS
<i>Smaller</i>	<i>Larger and coarser looking</i>
Head small and finely tapering	Head thicker and coarser
Simple chitinous lips on buccal rim	Four hooks on buccal rim
Dorsal conical tooth projects well into mouth	Does not project so well into mouth
Sexual opening in female in anterior half	Sexual opening in posterior third
Caudal bursa of male smaller.	Caudal bursa larger
Dorsal lobe sub divided	Not divided
Ova slightly larger	Ova slightly smaller

Dr. Macaulay draws the following conclusions, and those with Indian experience of the infection will largely agree with his views. The combination of other diseases as malaria and dysentery in what makes ankylostome infection serious —

"1. The Tamil coolies on rubber estates in Selangor are infected with hookworm disease to the extent of over 80%."

"2. The infection is not a severe one and large numbers of worms are the exception."

"3. Death *per se* from hookworm disease occurs in a small percentage."

"4. The smaller Necator americanus worm largely predominates and may account for the smaller amount of morbidity."

"5. It would appear, that on first arrival in this country, a certain number of coolies are highly infected, but after a time, a degree of immunity is conferred."

"6. Malarial fever is the principal factor in the causation of sickness, and hookworm disease only

secondary which by lowering vitality predisposes to other diseases, that often have a fatal termination."

"7. Young children, who do not go into the fields, and are mostly milk fed by the mothers, are not infected, or very slightly so."

In the *China Medical Journal* (January 1912), Dr. E. C. Peake writing of his medical experiences in Southern Hunan found 33 per cent of unselected cases to show ankylostome infection by microscopic examination of the stools, 83 per cent ascariis, 48 per cent trichocephalus dispar and only 1.3 per cent oxyuris, and in the same journal (page 13) Dr. Cadbury found 13 per cent ankylostome infection, 79 per cent ascariis, and 27 per cent trichocephalus in and around Canton.

All recent research into the prevalence of these intestinal parasites in tropical and sub-tropical countries* only go to confirm in most particulars the pioneer work done in India and Ceylon from 10 to 20 years ago by Giles, Dobson, Calvert, Maddox, Grainger, Clayton-Lane, and Thornhill (of Ceylon). The great prevalence of these worms is universally admitted, and at the same time when uncombined with other diseases† their comparative harmlessness in mild infections must also be admitted. We refer our readers to a special article in this issue on how ankylostome infection is spread.

CANAL ZONE MEDICAL ASSOCIATION

THE half-yearly volume (III, pt. 2, October 1910 to March 1911) of the Proceedings of this Association is just to hand, and as usual contains much of interest to medical men in the tropics.

Dr. Darling gives a full account of an indigenous case of *Oriental Sore* in the person of a Negio born in Demerara. He was bitten by a tabanid fly and the itching wound scratched, and finally a typical sore developed, and an organism of which the following account is given was found —

Length microns	Breadth microns	
6	3.5	Length of kinetonucleus 1.5 microns
5	3.5	Diameter of tiophonucleus 2.75 microns
6	3	
9	4.25	

The micro organism, while slightly larger than some of those described elsewhere, presented the same morphology noted in cases from the Old World, and it closely resembled the gregarine phase of *Cyrtidia* found in representatives of *Tabanus* and other invertebrates. It is not impossible that the case described here, following, as it does, the history of a bite by a tabanid, is the result of an inoculation with an invertebrate intestinal flagellate (*Cyrtidia*?), which was able to take up a parasitic existence in the tissues of man.

Smears from the ulcer were stained for the presence of acid fast bacilli, but none was found.

* *E.g.* the following figures are just to hand for Samoa, ascariis 80 per cent, uncinariasis 90 per cent, trichocephalus 70 per cent, filariasis 50 per cent (*Manila Bulletin* January 1912). In Guam Surgeon Odell gives ascariis and hookworms 100 per cent.

Histology—The ulcer is covered with a thick eosin staining mass of desquamated epithelium containing a few polymorphonuclear leukocytes. Beneath this the granuloma is nearly covered with squamous epithelium showing much metaplasia of the rete, which extends downward deeply into the corium and papillae, dividing it into elongated chambers. Here and there the stratum corneum is carried downward with the rete and is pinched off into cell nests. The corium and papillae are uniformly and richly infiltrated with newly formed cells of the lymphoid and plasma type, there are numerous proliferated endothelial and epithelioid cells and several giant cells also. The endothelium of the capillaries, particularly that of the papillae, is swollen and proliferated. There are no areas of necrosis. With the highest powers a few micro organisms (*L. tropica*) are seen in groups of from one to a dozen individuals imbedded in the cytoplasm or placed alongside the nucleus of an endothelial, epithelioid or other cell. In the deeper portions of the skin the cellular proliferation is limited to perivascular collections of small, round cells of the lymphoid type, surrounding blood and lymphatic vessels and sweat glands.

Dr A B Henrick, the chief of the Surgical Clinic at Ancon, describes also an unusual type of "Oriental Sore," in which the lesions were multiple the initial lesion being like a rodent ulcer and the later nodules like multiple epitheliomata. It occurred in the person of an old man Thomas Smith, an inhabitant of Jamaica, *L. tropica* were found in the bases of the ulcers. These cases therefore point to the probable existence of the *L. tropica* in the canal zone.

Dr Henrick and Dr T W Earhart have a valuable article on the trophic bone changes in leprosy.

"The pathological changes in the bones in leprosy occur in three different ways

1 The true trophic disturbance due to the altered innervation in which there takes place a simple atrophy or gradual absorption of the bone

2 An osteomyelitis or periostitis caused by the leprosy bacillus

3 A necrosis or inflammation of either of the above arising from secondary involvement by pyogenic organisms

These processes occur mainly in the fingers and toes and lead to a loss of the digits, from which this form of the disease gets its name of leprosy mutilans

Clinically the process in which a finger or toe is cast off or disappears presents two entirely different forms. The one shows simple atrophy and absorption of the digit without gross disturbance. The other presents an associated inflammatory process of various types. The former would represent a pure trophic type, and the latter a trophic inflammatory method of the mutilating process.

These trophic bone lesions, while not absolutely pathognomonic of the disease, are very characteristic of it.

Dr Darling and Dr L B Bates write on cases in which the bacillus dysenteriae were recovered from the blood and stools of cases in Panama—

"The following cases are reported for several reasons

First, to note the occurrence of *B. dysenteriae* in this region,—the Canal Zone and the native village of La Chorrera, Republic of Panama

Second, the isolation of *B. dysenteriae* (Shiga strain) from the circulating blood in a fatal case of dysentery

Third to emphasize the value of special media (Endo) in shortening the otherwise laborious technique of isolating *B. dysenteriae* from stools

In their efforts to isolate the dysentery bacillus from stools and autopsy material many workers inoculate large numbers of agar plates from broth cultures and then endeavour to pick the desired colonies after a macroscopical and microscopical examination. The suspicious colonies are then usually inoculated into a nutrient medium containing glucose and litmus, all gas formers being rejected, the rest saved for further study. Sometimes the number of colonies thus studied runs into the hundreds. This entails many hours of work, which work may be done in almost as many minutes by the use of a differential medium at the start. Many differential media have been suggested and used for the isolation of the typhoid bacillus, but little advantage seems to have been taken of this method in isolating the *B. dysenteriae*.

In our routine work of examining the stools and urine of typhoid convalescents for typhoid and paratyphoid bacilli we have used Endo's medium, and on account of the several biological characteristics which the dysentery bacillus has in common with the typhoid bacillus, this medium immediately suggested itself to us as an excellent one for the isolation of the dysentery bacillus. Neither the typhoid nor the dysentery bacillus ferments lactose, while many of the intestinal bacteria, especially *B. coli* and their near relatives, as well as many representatives of the *Coccacia* ferment lactose."

They conclude—

"First—By the use of a differential medium (Endo's) we have been able to isolate *B. dysenteriae*, the "Y" type from two sporadic cases of dysentery, one a white American, an inhabitant of Ancon, Canal Zone, the other an infant living in and native of the village of La Chorrera, in the Republic of Panama

Second—We have recovered from the circulating blood of a fatal case of dysentery in our routine blood culture work *B. dysenteriae*, one which agglutinates with anti-dysenteric serum in a dilution of one to two thousand and is culturally of the Shiga type"

Other valuable papers are on the prevalence of Pulmonary Tuberculosis in the Canal Zone and in affections of the Tonsils

TREATMENT OF TRACHOMA

In our last issue Lieut-Col Smith, and Capt Strother Smith, I.M.S., gave their experience of the cyanide of mercury treatment of trachoma, which is nowadays much used in India as a result of Smith's experience at Amritsar. In *Ophthalmology* (January 1912) there is a translation by Dr L D Fox of an article on the treatment of trachoma by Dr Jacovides of Egypt from which we make the following extracts—

1st Operation After flushing of the conjunctival palpebrae, bulbar and of the cul de sac, I seize the everted upper lid between the thumb and the index finger, which I pass all the length of the tarsus, squeezing in such a way as completely to loosen the tarsus and to force the hidden follicles to protrude outwardly, which one feels in that case as small, blunt points, which touch the cushion of your finger. That done, I raise, as much as possible with the fingers when that is too difficult, with a forceps, the upper lid everted in such a way as to expose the superior cul de sac, and with the marres scarifier I scarify wherever there may be follicles,

or granulations or papillary hypertrophies, so that the culs de sac as far as the extreme part of the tarsal conjunctiva of the upper and lower lids are completely scarified, and all seized portions well divided, that, with the digital expression at the outset, constitutes the first part of this little operation. The upper lid being all the time well everted, and the index finger of the left hand supporting the tarsus, I perform a regular curettage with Abadie's sharp curette, and strive to force into my curette all the expressed trachomatous matter until the moment when I hear the characteristic sound that the curette makes in scraping the tarsus, the instrument, well in position, is passed into the culs de sac and wherever I may deem it necessary, that constitutes the second and last stage of the operation, for there is nothing afterward to do but to use an antiseptic wash, which clears away the epithelial detritus, the clots of blood, etc.

To conclude, in cases of healthy cornea, I place some of the yellow oxide ointment between the lids, and I apply a wet dressing which the patient keeps on for two hours. In cases of keratitis or any kind of corneal complication, the special treatment of each case is then employed. The patient should bathe his eyes regularly every two hours, because following this treatment there is always some reaction and secretion.

2nd. Subsequent Treatment—From the day following, and during six to eight days, I apply cauterizations of nitrate of silver (2%) until all secretion has disappeared. That result having been obtained, I then commence applications of sulphate of copper in the form of glycerine 1% or 2%, according to the intensity of cauterization needed. By these means I have always seen cicatrices appear about the fifteenth, or in slower cases, about the twenty fifth day, but I have also seen some that have made their appearance about the tenth or twelfth day, thus greatly shortening the period of treatment.

At the clinic of the hospital and among my private patients, I have carried out the treatment described above upon about 15,000 cases, comprising all the forms of trachoma. The results have been superior to that from all other treatment, and although in my statistics I may find 8 to 10 per cent of relapses, especially among children, yet I have not been able to assure myself that such were not from reinfection, a thing which frequently happens here. Nevertheless, in these cases, the repetition of the same procedure has been successful.

ARNETH'S NUCLEAR CLASSIFICATION

DR WESLON P. CHAMBERLAIN and E. B. Kedder publish (*Philippine J. of Sci.*, November 1911) a valuable report being a study of Arneth's nuclear classification of the neutrophils in healthy adult males and the influence thereon of race, complexion and tropical residence.

Arneth's classification is thus described—

"A classification of polymorphonuclear neutrophils based on the number of nuclei or nuclear fragments was proposed by Arneth in 1904. He described 5 main classes. Class I has a single nucleus which may be round or of irregular shape. If the nucleus is round, the cell is then identical with Ehrlich's neutrophilic myelocyte (which is not found normally in the peripheral circulation). Class II includes the neutrophils with 2 nuclei or nuclear fragments. Class III has 3 nuclei or fragments and is the largest class in normal blood. Classes IV and V have respectively 4 and 5 nuclei or nuclear fragments. A fairly constant proportion between the different classes is found in normal blood. The "neutrophilic blood picture" as given

by Arneth is for each one 100 polymorphonuclear leucocytes as follows—

Class I	Class II	Class III	Class IV	Class V	Index (Arneth)	Index (Bushnell and Treuholtz)
51	35	41	17	2	40.0	60.5

Simon gives the following normal range for each 100 neutrophils

Class I	Class II	Class III	Class IV	Class V
4.9	21.47	33.48	9.23	2.4

The so called nuclear fragments seldom if ever present separate nuclei, but only lobes of a polymorphous nucleus, the connecting nuclear substance being drawn out into a fine thread. The "index" is a standard for comparison of different pictures. Arneth adopted as an "index" the sum of Classes I and II, while Bushnell and Treuholtz selected the sum of Classes I and II and one half of class III.

The polymorphonuclear leucocyte is the active phagocytic cell of the blood stream, and the corpuscles with 3 or 4 nuclear fragments are considered the adults and are thought to be most active as phagocytes and best fitted to protect the body against invading organisms. The superannuated cells represented by Class V and the immature cells represented by Classes I and II are less able to take up the defence of the body. Pottenger in a series of experiments found a gradual rise in phagocytic power from Class I to Class IV inclusive, and a decrease in Class V.

When the first and second classes are increased above normal and the third and fourth are correspondingly decreased the condition is spoken of as a "shift to the left" while the reverse alteration is called a "shift to the right."

We may now quote the conclusions arrived at by the authors.

Summary—After a consideration of the above four sections, it will be evident that in our series of Filipino bloods there is: First, an absolute number of white cells within normal limits; second, a markedly low relative proportion of polymorphonuclear neutrophils; and third, an abnormally high percentage of the neutrophilic elements which fall in Classes I and II of Arneth and which are supposed to be deficient in phagocytic power. Therefore, in the Filipino blood there is both a relative and an absolute reduction in the phagocytes, the cells which, with the aid of opsonins are concerned in destroying bacterial invaders.

If this state of things is general in tropical races it may be a valuable indication of the lowered resistance of such peoples to certain newly introduced maladies and to some epidemic tropical diseases which generally cause a higher mortality among natives than is experienced among Caucasians. In the first class of diseases may be mentioned measles, leprosy, syphilis, and tuberculosis, and in the second class plague and cholera. Apparently the natives of the Philippines have a good resistance to infections with staphylococci and streptococci and this clinical fact may be related to the observations of Buchanan who could find no relationship between the degree of nuclear subdivision and the number of cocci engulfed by the neutrophilic cells.

POSSIBLE INFLUENCE OF TROPICAL CLIMATE

Whether the reduction we have found in the phagocytic elements of the blood may be the result of a

tropical climate *per se* is an interesting subject for speculation and for future study. About a year ago we suggested (9) that the low polymorphonuclear count in natives and white men in the Philippines might indicate lowered resistance and be due to tropical conditions. The work of Wickline showing that the decrease of polymorphonuclear elements becomes progressively more marked as the length of residence in the Philippines increases, is suggestive that the change is due to the climate. Our recent work with the Arneth classification points in the same direction, since the index for white men who had lived over a year in the Islands is a little higher than has been found normal in temperate climates by most observers. On account of the many complicating factors, three of which are mentioned below, it will be extremely difficult to establish a direct relationship between climate and diminished phagocytic power.

THE PREVENTION OF GUINEAWORM DISEASE

THE prevalence of guineaworm in many parts of India renders any knowledge we may have of method of prevention valuable. It is not quite settled whether the infection reaches the tissues direct through the skin as seems highly probable, though we may remember that Dr R. T. Leiper has shown that the liberated embryos can pass through the stomach wall of their host.

It is said by Leiper that "it has been demonstrated in India that wells infected with guineaworm can remain infective for many months, though as a matter of fact, the water of ponds, tanks and puddles is probably more often the medium of transmission into the host of cyclops," the more so as he admits that 90 per cent of guineaworm eruptions appear on the lower extremities. In the new *Journal of the London School of Tropical Medicine* (p 29, vol I, No 1), Leiper has a rather impracticable article on this matter. He says quite rightly that "to render the water innocuous the infective stage of the guineaworm, *i.e.*, the metamorphosed larva within the cyclops must be destroyed." When the infected cyclops dies the encysted worm also dies. Dr Leiper then shows that in the laboratory it is comparatively easy to kill the cyclops by raising the water from 15° C to 35° C, but we need hardly follow him in his impracticable suggestion to boil or heat the water in wells by passing steam through them. Just fancy such a suggestion for dealing with the village wells say of the Punjab!

It is evident that guineaworm is one of these diseases which will be banished when the general spread of sanitation in tropical countries has insured the drainage of puddles, ponds and the supervision of all water supplies. Theoretically we may say that guineaworm can be banished by drainage and filtration, but that does not carry us very far, though it can be usefully employed around regimental lines or in the neighbourhood of cantonments.

Another important matter is that the guineaworm can infect and attain maturity in domesticated animals. As regards treatment of

the worm the last word on this subject appears to be the use of Chinosol as advocated by Capt H. Acton, I.M.S., in our columns (*I M G*, July, 1910).

THE ASIATIC SOCIETY OF BENGAL

THERE was a considerable gathering of medical men at the annual meeting of the Asiatic Society of Bengal, to hear the address given on 7th February by Colonel G. F. A. Harris, C.S.I., M.D., F.R.C.P., the President of this learned and ancient Society. It appears that in the long roll of 40 able men who have held the position of President of the Asiatic Society there have only been previously one medical man, though medical men have always been among the greatest supporters of the Society and men like Dr Horace Hayman Wilson, the oriental scholar, and I.M.S. officer, was for 22 years the Secretary of the Society. The only other Medical President was Sir Joseph Fayrer, who was elected in 1867.

Colonel Harris' appointment to this high post is not only a tribute to his talents and ability, but marks the fact that since the institution of the Medical Section the medical men of Bengal and other parts of India have joined the Society in large numbers and the newest section, the medical one is not the least flourishing portion of a Society which takes "all knowledge" as its motto. Col Harris had a fine subject for his address (and as Sir Asutosh Mukerjee said when proposing a vote of thanks, it was well to remind the Society that there were other subjects of interest to the Society beyond numismatics and philology), *viz.*, the progress of tropical medicine, in which he touched upon only a few of the most important advances and especially those made by members of the Society, *e.g.*, McCay's researches into metabolism and the dieting of students and other people in Bengal, Greig and Hooper's work on ber-ber and epidemic dropsy and their connection with food supplies, Rogers' treatment of cholera and of liver abscess, &c.

The address has attracted considerable attention and has been commented on widely in the lay press.

ROGERS' CHOLERA TREATMENT IN SICILY

THE following opinion was expressed by Prof Romano of Palermo on the cholera work done last summer by Maj L. Rogers, F.R.C.P., C.I.E., I.M.S., at Palermo, Sicily, we quote it from *Proceedings of the Royal Society of Medicine* (Vol V, No 2, Dec 1911, p 62).

"I, the undersigned Director of this Lazaretto, do declare that Professor Leonard Rogers lived in this hospital from August 4th until to-day (August 25th, 1911), in order to practise and demonstrate his method of treatment of cholera. The results obtained have been more than satisfactory, they

have been surprising, seeing that many of the patients who were admitted at the point of death regained their health were discharged cured.

In a later letter Professor Romano said—"I have the honour to inform you of the marvellous progress made by the patients whom you left under treatment, I communicate the results obtained from a large number of patients who were brought here in a hopeless condition and who have almost all been saved through your valuable and marvellous method of treatment."

In the first ten days at Palermo Major Rogers treated 27 cases by intravenous injections and there were fourteen recoveries 51.8 per cent, during the second period of 12 days 40 patients were treated with 24 complete recoveries or 60 per cent recovery.

The most recent example of the success of this treatment has been in the case of Lieut.-Col. F. P. Maynard, F.R.C.S., I.M.S., on whom Major Rogers personally attended during his severe attack in the end of February last.

TREATMENT OF DYSENTERY

THIS is surely a well worn topic, but as a matter of fact as long as the relative prevalence of the various forms of dysentery is unsettled, we cannot say that there is any finality in the treatment. There are many forms of dysentery including the form nastily called verminous and it must never be forgotten that in many chronic and wasting diseases a distinct form of dysentery which a dozen years ago we described as "terminal dysentery" does occur within a week or so of death.

Apart, however, from such types modern teaching tells us of two chief forms, namely, bacillary and amebic, but we yet await a clear and definite clinical differentiation between the two, and a perusal of the very considerable recent literature of dysentery has failed to give us the clue.

This being so it is obvious that methods of treatment must vary. Over 12 years ago the present writer published details of over 1,000 consecutive cases treated by the salines with only one death. Others have praised calomel, others rectal injections, many pin their faith to ipecacuanha, while even recently men have been found to preach the value of heroic doses of lismuth, while others have found bismuth positively harmful. Recently we saw a series of mild cases treated by *isfagul*, and we remember successfully treating a series of some 20 cases by no more potent a drug than peppermint water.

The above thoughts were suggested by a perusal of two papers on dysentery, one by Dr. W. E. Musgrave of Malina, or what it is in the Philippine Islands the fashion to call "intestinal amebiasis", and the other by Dr. Andrew Duncan in a recent issue of the *Journal of Tropical Medicine* (January 15). The follow-

ing extract from Dr. Musgrave's paper must be quoted *in extenso*—

THE IPECAC TREATMENT

One may obtain from the literature of the subject pretty good authority for the most divergent views as to the value of ipecac in dysentery. It is not my intention to review this mass of literature, which consists largely of conclusions arrived at as a result of that very difficult and often fallacious test, "clinical results."

If we assume, as we must, the honesty and accuracy of the observations of many experienced workers who have reached diametrically opposite conclusions from their experiences with this drug, it is reasonable to conclude that there are unknown or overlooked factors which have influenced their conclusions.

The three most important of these factors are

- 1 The incomplete knowledge of the pharmacology of ipecac
- 2 The different conceptions of "dysentery"
- 3 The various definitions as to what constitutes a cure in "dysentery"

Very little is known of the physiologic action and other pharmacologic properties of ipecac, and because of this deficient knowledge it is impossible for manufacturing chemists to standardize their products, with the result that there may be a considerable variation in the efficiency of the drug as it is found on the market.

The drug very probably exerts some very decided action on the intestine, as is proved by the results of its administration to healthy persons.

Ten healthy persons with no symptoms of gastrointestinal disturbance were given 3 gram doses of powdered ipecac in salol coated pills in a manner similar to that employed in the "ipecac treatment" of dysentery.

Seven of these persons developed diarrhoea, which in four was severe with frequent stools, and the condition lasted from two to four days, in three there was considerable abdominal pain and slight tenesmus. Special preparation to prevent nausea and vomiting usually are not necessary with Filipino patients because, in the majority of instances the administration of the drug in ordinary gelatin capsules is not followed by either nausea or vomiting.

Without doubt the most important factor influencing the various opinions regarding the value of ipecac in dysentery is the wide difference in the definition of "dysentery" among medical men. This statement is true to such an extent that if we carefully examine the literature with this point in view, it is possible to see a good deal of harmony in the results of actual experiments. In general, it may be stated that the majority of pro ipecac literature deals with results obtained in acute and chronic "clinical dysentery" characterized by frequent stools with blood and mucus and usually accompanied by tenesmus, whereas most of the writers who have made less satisfactory reports as to the value of the drug in amebiasis have considered the disease more from etiologic and pathologic standpoints and have thereby included many of these numerous cases of ulceration of the colon without "clinical dysentery" symptoms—cases which are rarely classed as dysentery—amebic or otherwise—in the reports most favourable to the ipecac treatment of the disease.

With a few notable exceptions, articles discussing the ipecac treatment of dysentery follow the above idea so closely that one may anticipate the author's conclusions by reading abstracts of his clinical case records. Such an analysis of the literature permits one general conclusion—which so far as I know never has been seriously disputed—that ipecac is a valuable drug in "clinical dysentery" of whatever etiology.

After a personal experience with the ipecac treatment in several hundred cases, it has seemed to me possible to estimate its value only in terms of "clinical symptoms," which we now know do not necessarily express the actual conditions existing in the colon in amebiasis.

In "clinical dysentery," as defined above, of whatever etiology, ipecac given in large doses, as usually recommended, is a valuable drug. In the majority of instances its administration is followed by a rapid subsidence of the symptoms and quick convalescence. In a smaller percentage of such cases it apparently does no good whatever, and in a not insignificant number its administration is followed by an aggravation of the symptoms which in some grave cases may at least hasten an unfavourable termination, particularly if, as may happen even with the greatest care severe nausea and vomiting results from the treatment.

However, it must be remembered that it is in the class of "clinical dysenteries" that the best results are obtained with other forms of treatment beside that of ipecac. The natural course of an acute attack of dysentery is usually short and terminates in death or recovery. In a small percentage of cases "chronic dysentery" follows an initial acute dysentery, but in the majority of instances the chronic disease, particularly of amoebic etiology, develops gradually and no such acute onset occurs.

Acute outbreaks, due either to an exacerbation or to intercurrent infection, are frequent in chronic dysenteries, particularly in amoebic cases, and, if the patient can withstand the effects of the acute inflammation, a beneficial influence on the chronic process usually results. This is true particularly in intestinal amoebiasis as is indicated by the following brief report of fourteen such cases.

In fourteen private patients suffering from intestinal amoebiasis a cure with permanent disappearance of amoebæ from the stools has followed recovery from an intercurrent acute dysentery which in the four cases, in which the cause was studied, was due to the *bacillus dysenteriae*.

The occurrence of these double infections as Dr Musgrave calls them is important, and he interprets them as "an acute inflammatory bacillary condition engrafted on the older amoebic infection," as undoubtedly must occur in the cases we long ago called "terminal dysentery."

Dr Musgrave is much in favour of local treatment by bowel irrigation, a method* which will never be popular among natives of India, he gives directions for the proper use of such enemata and gives a formula for a thymol enema consisting, 10 c.c. of the following mixture added to the enema, thymol 25 c.c., alcohol and glycerine both 250 c.c. This gives approximately a 1 in 2,000 solution of the drug which is said to be actively amoebicidal in a solution of 1 in 10,000.

Dr Andrew Duncan's case was in a Naval Officer, aged 19, who had had what Duncan describes as "classical" amoebic dysentery of the type described by Councilman, and Laffey (not "Conathan" as a contemporary spells the name). This patient had used izal with no effect, Dr Duncan put him on 9 grain doses of ipecacuanha and he steadily recovered.

The following opinion is refreshing "During the whole of my service in India" (says Duncan) "I never saw a single case of amoebic dysentery, that is to say, dysentery showing a long course and with the evacuation described in the Johns Hopkins Hospital Reports."

In this opinion our own experience inclines us to agree. We still believe that it is not yet

proved that the amoebæ are harmful, and that they are a cause of dysentery. Bacillary dysentery we may agree is an entity.

This only leads us to the conclusion that we have often stated before and that is that we are still ignorant of dysentery and no subject deserves more attention at the hands of an expert.

LARVICIDES

THE search for a satisfactory larvicide is far from ended and the substance in most common use, viz, petroleum in one or other form, acts admirably at first, by forming a thin film and so drowning the larvæ when they rise to the surface of the water to breathe, but has the drawback of soon getting broken up and blown away, and at any rate the presence of grass or weeds prevents the formation of an unbroken film.

The ideal larvicide, writes Sir R. Ross and Dr E. S. Edie (*Annals of Tropical Medicine and Parasitology*, Vol V, No 3, p 385), "would be a solid substance which kills larvæ when used in the form of an extremely dilute solution," and it should be added a substance which while it kills larvæ in a dilute solution will not harm human beings or other animals who may drink the water.

In the paper quoted Ross and Edie give the result of many laboratory experiments on various substances, using the *Culex pipiens* larvæ about 50 in each case.

The first experimented on Le Prince's larvicide which had or has a great vogue in the canal zone. This is made up by dissolving resin in crude carbolic acid and treating the solution with caustic soda. It is made in the proportion of thirty gallons crude carbolic acid, 20 lbs resin and 3 lbs caustic soda. Whether the mixture was properly prepared or not, Ross and Edie did not find it as successful as represented.

They next tried Sanitas Okol, which they found to be a powerful larvicide in dilutions up to 1 in 10,000, and it is also non-poisonous.

Mercuric chloride was found to be not only dangerous but to be a feeble larvicide and copper sulphate is equally useless.

They next tried the highly poisonous potassium cyanide and found that in extremely dilute solution 1 in 300,000 the larvæ all died off within 18 hours. It is therefore a very potent larvicide and is comparatively cheap, its great and serious drawback is that it is highly poisonous. Our authors say its use can be restricted to stagnant water which is not used for drinking purposes. This, however, is a very dangerous distinction in the case of village ponds, pools and tanks in rural India. They recommend tablets of this poison each containing 3 or 4 grains of cyanide, "which will suffice for 12 or 16 gallons of water," that is, two such tablets

* This method is used with much success in more than one jail for the variety of "dysentery" known as "self induced."

to kill the larvæ in as much water as is contained in a bath tub! These laboratory experiments are interesting, but to recommend such a poison for use in the rural areas or even in tropical towns or cities is totally absurd. The ideal larvicide is yet to be found.

THE PUBLIC HEALTH CONGRESS AT BERLIN

THE Royal Institute of Public Health propose a new departure during the coming summer and that is no less than an invasion of Germany. The Congress will be held in Berlin from 25th July to 28th July 1912, and will be attended by a large number of lay and medical representatives from Great Britain, including the Lord Mayor of London, who, as our readers know, is a medical man.

The work will be divided into five sections, and the one of most interest to many of us will be Section D, Naval, Military and Colonial, under the Presidency of Sir Ronald Ross, KCB, FRS, of which Colonel W G King, CIE, IMS (retired), is the Secretary.

The attendance of I M S officers is invited by Colonel King, arrangements are being made for reduced travelling and hotel expenses. All further information may be obtained from Colonel W G King, CIE, at Clowelly, Hatch End, Middlesex, or Mr J Canthe, 37, Russell Square, W C.

We hope that men going on leave will help the Institute to make this Congress a success. Papers are also invited.

THE special numbers of the *Practitioner* are famous and always of value, and this remark certainly applies to the most useful special number on *Rheumatism*, which ushers in the 88th volume (January 1912) of our well-known contemporary.

The whole 200 pages are good, but we may call special attention to a few of the articles, eg, that by Sir Dyce Duckworth on the Diathesis, and by Dr Bunney Yeo on the treatment of acute rheumatism. Dr Luff on the diagnosis of rheumatoid arthritis is excellent, and Dr Stockman's note on drugs in rheumatic conditions is practical. The article on sciatica and the various articles on spa treatment are full of information, and that by Dr A. Mantle on present day accepted aetiology is very useful.

We can recommend this special number to all our readers.

WE regret to learn of the demise of our excellent contemporary, *Indian Public Health*, as Dr A G Newell, M D, DPH, Medical Officer of Health, Lahore, can no longer afford the time necessary to its production.

Reviews

Notes on Sanitation for Indian Troops—By Captain T F PATERSON, BA, MB, IMS
Calcutta Thacker, Spink & Co, 1911 Price, Re 1-8

IN reviewing various books of recent years on military hygiene and sanitation we have more than once expressed the opinion that a book on the subject, but devoted to Indian troops and Indian conditions was much needed.

A small book has now appeared written by Captain T F Paterson, IMS, which as far as it goes helps to fill this want. Captain Paterson is very modest about his little book, as a matter of fact, it is full of useful information and thoroughly practical. It is based on lectures on sanitation delivered to the class to the 37th Lancers, and a useful and necessary Urdu translation by Sub-Assistant-Surgeons Anant Singh and Sunder Singh is also attached, printed in Roman character on corresponding pages.

The booklet begins with an introduction. The not easy subject of the causes of disease is well got over and contains the facts in language as simple as possible, the use of the word 'seed' (*by*) to translate germs or bacteria is admissible and the causation of the ordinary disease is explained as clearly as well could be. Other equally clear and practical chapters follow on malaria, Malta fever, tuberculosis, attendance on the sick, on air, food, water, clothing and sanitation of rivers and camps.

It is a very useful little book. The Urdu translation seemed to us to be well done. The publishers have got up the little book in an elegant way with a damp and insect-proof binding, and it is of the size and shape of many small military manuals. We can confidently recommend the book. It should be in the hand of every Regimental Medical Officer, Sub-Assistant Surgeon and Native Officer in the Indian Army.

Hospital and Dispensary Code—By Major N P O'GORMAN LALOR, MB, DPH, IMS
Calcutta, 1912 Thacker, Spink & Co Price, Rs 2

THIS excellent little book is intended for the use of Sub-Assistant-Surgeons and is a code of minor surgical procedure and therapeutics. The little book in another form has been very favourably received in Burma, and we think Major Lalor was well advised in bringing out this useful handbook.

The book is divided into six parts, viz (1) minor surgery and emergency cases, (2) medical formulæ, (3) infant feeding, &c, (4) treatment of cholera and plague (5) invalid diet and cooking, (6) a convenient type of small hospital and dispensary.

To give our readers an idea of the contents of this little book we may mention the subjects dealt with in some of the above parts

To begin with under "minor surgical procedure" we have clear rules laid down for the care of sponges, nail brushes, ligatures, raw catgut drainage tubes, instruments, dressings, towels, furniture and skin of area of operation. The useful note on personal antiseptics might well have been placed at the beginning of the book. Other sections deal with wounds seen some time after infection, acute abscess, ulcers of all kinds, and hypodermic injections, in which the advice of Capt McKechnie, as given in these columns, is followed. The note on the care of catheters is excellent, as is also that on local applications (boric compress, &c). Under the heading "Emergency Cases" alcoholic and opium poison are treated, also heat stroke, head injury, spitting and vomiting of blood, collapse, bite and stings of animals and snake-bite, as well as the treatment of burns and scalds.

Part II consists of 58 useful and well selected formulæ or prescriptions. The chapter on infant feeding is good and practical. The chapter on a suitable type of small dispensary is certainly good and will be of interest to many Civil Surgeons.

The little book should prove most useful, and Civil Surgeons and Regimental Medical Officers would do well to recommend it to all their medical subordinates. It is well and neatly got up and clearly printed.

Outlines of Domestic Science for Indian Readers—By LILIAN SAWTELL. Longmans Green & Co, 1912. Price, Rs 14.

THE importance of knowing best way to manage the house has led to the inclusion of the teaching of domestic science into girls' schools, and as books dealing with this subject are usually written exclusively from the point of view of people living in England, Indian needs and conditions are not referred to.

The present little book can be confidently recommended to young housewives in India. The chapter on the human body is simple and clear. It would, we think, have been better to divide the chapter on food and cookery, which is very good and instructive into two sections, one on English and the other as native cookery. The chapter on air and ventilation are excellent and deserve to be known and studied in every girls' school in India. The section in cleaning the house and on care and use of clothes are very good.

We can highly commend this useful little book and would be glad to see it used as a textbook in every school for girls in India.

Medical Laboratory Methods—By H. FRENCH. London: Baillière, Tindall and Cox, 3rd Ed., 1912, pp viii, 204, 88 Illustrations. Price, 5s net.

THIS elegant little book has rapidly reached its third edition which proves that it has been

found useful. We recommended the former editions and we can safely do the same for this new edition. In it new methods and tests have been introduced. It confines itself to chemical and microscopical methods of recognised value, and the chapters in examination of the urine, blood, sputum, pus, feces, gastric contents, &c, are all good. The chapter on blood examination is, we think, particularly good.

The book is clearly and well printed and bound in a flexible cover.

Advances in Tropical Medicine—Supplement to 4th Report of the Wellcome Tropical Laboratory, Khartoum.

THIS is a truly magnificent compilation, it is a complete dictionary of recent progress in tropical science. At a time when we in India are pleading for a full time staff for the Calcutta Tropical Research Laboratory (which working in connection with the enormous clientele of the large Medical College Hospital should become the foremost Tropical School in the world) it is somewhat bewildering to read of the splendid staff attached to these Wellcome Research Laboratories and to think of the time they must have had at their disposal to compile three large volumes during the current year.

In a recent issue we have given a most favourable account of the 4th Report of the Wellcome Laboratories, now we have two big supplementary volumes before us, vol. A dealing in a very thorough and complete way with the recent literature of recent work in tropical medicine and veterinary science, and vol. B dealing with general science.

We have in our time had on our table many volumes purporting to be retrospects or annual summaries of medical work, but we never before have seen anything done in the thorough and complete way it has been done in the big volume before us, and our surprise turns to wonder when one looks at the list of contents and sees the number of the articles written by Dr. A. Balfour and the Pathologist Capt. R. G. Archibald, R.A.M.C. (attached E.A.).

In the preface our authors talk of how incomplete this Review really is compared with some monumental Teutonic catalogue, but Dr. Balfour and his colleagues have certainly produced the most useful résumé and critical summary of recent research in tropical medicine that we have ever seen. It will remain on our table as a very useful dictionary of reference. Such a compilation is well worthy of attention of all workers in out-of-the-way places, or in the very many stations where there is no medical library. This volume is a library in itself of recent tropical literature.

It is too big a book to attempt to criticise or review. We can certainly recommend it to our

readers and the publishers have done their work well. The book though measuring $11 \times 8 \times 2\frac{1}{2}$ inches is light to handle and well and clearly printed.

On Food and Cooking—By I. M. MULICK, M.A., M.D., Indian Medical Record Office. Price, Re 18.

THIS is a collection of articles, essays and lectures written or delivered by Dr. I. M. Mulick of Calcutta. Their great importance lies in the fact that Dr. Mulick is seriously concerned with the conditions of student life in Calcutta and does not hesitate to point out the extremely unfavourable surroundings in which the student has to live in Calcutta, and, doubtless, the same is the case in other large educational centres in India. The degree of congestion and overcrowding Dr. Mulick tells us is almost incredible, and he has no hesitation in pointing out the facts, however unpalatable they may be to educationalists. He shows that the average age of students at time of the Entrance Examination is only 15 years and no less than 18 per cent of these boys are already married, at 19 years 39 per cent are married, and by the time the B.A. is reached no less than 55 per cent are married. No wonder Dr. Mulick stigmatises early marriage as "*the worst bane of our society and the most patent cause of social degeneration*," and no wonder so many breakdown at the age of 30 to 40 in the strain of professional struggle.

Dr. Mulick makes use of Major McCay's well-known researches into metabolism, and points out the food obtainable by most students is insufficient and deficient in protein and is not easily assimilable.

This little book is well worthy of study by all interested in student life in India and can be strongly recommended to our readers.

Military Sanitation for Regimental Officers

—By Major K. B. BARNETT, M.B., F.R.C.S., R.A.M.C. London. Forster Groom & Co., Ltd., 1912. Price, 2s 6d.

Now that regimental officers are taught hygiene and that in Field Marshall Sir E. Wood's words the Army doctor is regarded as a "trusted staff officer to advise their chiefs how to guard the troops against the originating and spreading of disease," and when soldiers like Sir H. L. Smith-Dorrien write an introduction to books like this, there is hope that in future wars the British Army may be spared much of the long list of casualties caused by disease which have marked the progress of all wars up to date, for we are not disposed to accept as gospel the figures given by the Japanese of their sickness in the late war. No doubt their results were good comparatively, but we are not inclined to accept the figures of 250 casualties from disease to 100 at the hand of the enemy, when we remember

that our South African figures were 2,000 sick to 100 wounded by the enemy.

At any rate the British rate is enormously in excess, and if it is to be lessened the sanitary officer must be supported wholeheartedly by the combatant, and the only way to do this is by educating the regimental officer, and this is now being done, and at Sandhurst a few marks (too few) are allotted to the subject sanitation.

We have read Major Barnett's book with great pleasure, it is clearly written and full of accurate information and should prove of great value to regimental officers.

Outlines of Early Development for Obstetric Students—By R. W. JOHNSTONE, M.A., M.D., F.R.C.S.E., Edinburgh, with a Preface by Sir J. Halliday Croom John Currie, Edinburgh, 1911.

THIS is a concise and careful sketch of the early life-history of the human ovum. Much of our knowledge of the different stages of development is merely a deduction from what is known to occur in animals, as human ova in the early stages of development are somewhat difficult to obtain. The account given is distinctly good, the facts known are clearly put, and, as its use is intended for students, it loses nothing from being somewhat more dogmatic than the state of our knowledge at present perhaps warrant. Students and others interested in the subject would be well advised to obtain a copy of this little book. There are only about 23 pages and it will be found most of the information required on the subject.

Further Researches into Induced Cell Reproduction and Cancer—By H. C. ROSS, M.R.C.S., L.R.C.P. The MacFadden Researches, John Murray, Albemarle St., London. 3s 6d. 1911.

THIS little book consists of papers by the workers associated with this subject which have already appeared in different journals. It describes a method of which human white blood corpuscles and other cells can be made to divide when they are absorbing certain chemical agents from a film of jelly set on a microscopic slide. The chemical agents evidently cause the divisions, and this fact formed the basis of a theory as to the possible causation of benign and malignant growths within the body.

The methods are absolutely new and the results obtained will require careful confirmation at the hands of others, but from a perusal of the book we have no hesitation in saying that the author and his co-workers have struck a new line which may in the near future yield most important results. Every contribution to the study of cell reproduction and cancer research is of absorbing interest, and we hope this new method of research will confirm the expectations of its well-wishers.

On Bronchial Asthma Its Pathology and Treatment—By J B BERKART, M D, Revised and Abridged, Third Edition Published by Henry Frowde, Oxford University Press Price, 5s Pp 150, figs 12

DR BERKART fails to find any evidence of a spasmodic element in asthma, and attributes it to a plastic bronchitis of a peculiar nature. The argument of the book is somewhat as follows. Rarely is the asthmatic well built usually he is a "miserable looking wretch," too tall or too short, pale and emaciated or purple and obese, with spinal deformity, and a thorax also deformed and too small. These stigmata are attributed to rickets, the accompanying alteration in the bone marrow being held responsible for the eosinophilia. Typical asthma is preceded by signs of inflammation of the respiratory tract, such as colds and coughs, and is itself characterised by rapidly varying dry sounds, which, however, become moist at the end of the paroxysm, this change being accompanied by the expectoration of very tenacious compact masses containing definite bronchial casts composed of round and cylindrical epithelial cells, white spiral threads and Charcot-Leyden crystals. Their expectoration brings relief.

During the last 25 years *post-mortem* examinations have been reported upon seven cases of asthma, and in all these cases there has been obstruction of the bronchial tree by those substances which may be observed in the sputum during life, the medium-sized and smaller bronchi were dilated, and the alveoli mostly emphysematous. The author's conception of the underlying changes is that the dyspnoea being constantly associated with an abnormal exudation, is a symptom of catarrh. The complex character of the sputum points to its being formed gradually as an exudation from, and degeneration of cells producing hollow or solid casts. The process being patchy in distribution, these casts do not produce symptoms of obstruction unless they become displaced and suddenly block a bronchus supplying a larger area of lung, in fact, he considers that in nearly all cases it is this displacement and impaction which is at the bottom of bronchial asthma, the displacement in turn resulting from an increase in the depth of respiration such as accompanies coughing, laughing or sneezing, the increased demand for oxygen after a meal, or the change from town to the fresh air of country or seaside. In yet other instances a sudden overtaxing of the heart in kidney or heart disease with its associated congestion or oedema of the lungs, or an intercurrent attack of bronchial inflammation, is sufficient to upset the physiological balance, when the available respiratory area is already reduced. Regarding treatment, there is no specific. Stramonium and cocaine do in the end much harm, owing to their action on the nervous system, and should not be used. Rational instructions are given

as to the possibility of avoiding sudden displacements of the bronchial casts, and the lighting up of a fresh inflammation, the soothing of the nervous system rendered irritable, as it nearly always has been by the use of stramonium and cocaine. Among solvents of the exudation the author gives a high place to diphtheria anti-toxin, and in combating the paroxysm holds morphia as invaluable, probably by its use in combating the fight which the paroxysm always induces, and which in turn aggravates the violence of the attack.

It will be obvious that the book is not one of those bringing forward a freak theory, but that it aims, at bringing together the facts by a reasonable hypothesis. The book is interesting and readable, and the treatment of the disease which has been very imperfectly reviewed, ought to prove helpful to those who have to treat this very unsatisfactory disability.

Handbook of Medical Diagnosis—By J C WILSON, M D 418 Illustrations and 14 Plates Third Edition, thoroughly Revised Philadelphia and London J B Lippincott & Co Price, 25s net

FOR a large book like this to have passed into a third edition in less than two years is somewhat phenomenal and stamps a book at once with the hallmark of usefulness and success. It is certainly a splendid book. It is divided into four parts—diagnosis in general, methods and then immediate results, symptoms and signs and their clinical application. Dr Wilson is Professor of Clinical Medicine in the well-known Jefferson Medical College and has a vast experience. The big volume is one that cannot be briefly reviewed, it consists of 1,415 pages. We have read many of them and have been impressed with their thorough and practical nature. The illustrations and plates are extremely well done. We have never seen better illustration of vaccination than those given at p 664 of the book.

We can thoroughly recommend the book both to students and to practitioners.

SPECIAL ARTICLE

HOW ANKYLOSTOME INFECTION OCCURS

THE anatomy of *Anchyllostoma duodenale* (Looss retains the Greek spelling) was dealt with by this author in 1905 in Vol III of the *Records of the Egyptian Government School of Medicine*. He now deals in Vol IV of the same series, with its development in the free state. The volume contains about 450 pages and a number of fine plates. The chief points in it are summarised as follows. *Anchyllostoma duodenale* is under natural conditions a parasite of man alone, though it is capable of infecting young

puppies under artificial conditions *Necator americanus* is limited to man and the chimpanzee. Hence the failure to infect the ordinary laboratory experimental animals with the worm. The eggs of *Ancylostoma duodenale* are almost precisely similar to those of ankylostomes inhabiting other animals, such as the dog ankylostome, and only to be distinguished with difficulty from those of sclerostomes inhabiting the gut of equines. These resemblances explain false claims that these domestic animals spread human ankylostomiasis. The eggs of all ankylostomes are passed in the feces in segmentation. In the fecal mass embryos appear in the eggs, hatch into larvæ which undergo two ecdyses and are then mature, and then and then only able to re-infect. The mature larva lies within the skin of the last ecdysis, absolutely shut off from food and air, and living on reserve granules stored in the cells of its chyle-intestine. Of the factors influencing larval development, excessive decomposition is the most inimical. It can be combated artificially by the addition to the feces of animal charcoal. In feces from a purely vegetable diet larvæ develop poorly, a very small addition of milk cheese or other animal food is sufficient to ensure normal development. A purely or preponderately animal diet produces poor development, for decomposition is more intense. Air is essential for development, but the amount need only be small, and development which has ceased because this has been cut off will proceed normally when it is again supplied. When mature, larvæ will live active lives for 3 weeks in an atmosphere of hydrogen. The optimum temperature for development is 30°–35°C, in the absence of excessive decomposition temperatures of 40° or even 45°C are not harmful. The lower critical temperature required for development seems to be between 8° and 10°C, but eggs and mature larvæ can stand freezing without death. Moisture in excess is injurious to development only indirectly, either by the excessive decomposition it favors, or by the dilution of food and the consequent starvation of the larvæ. On the other hand, as soon as they are mature, larvæ leave the feces for water, which is then their natural element. Complete drying means death to ova and larvæ of all stages. Sunlight is not harmful to development, nor do larvæ appear to have any natural enemies. Eggs and young larvæ are easily killed by disinfectants, mature larvæ are extraordinarily resistant. The mature larvæ having left the feces for water can live in this for months, they cannot, however, swim in it but sink inevitably to the bottom. The warmer the water the more active are the larvæ, the sooner are their reserve food granules exhausted and the sooner do they die of starvation. Other biological phenomena of great practical importance are "tropisms." Mature larvæ try to climb out of the fecal mass in which they have grown, they rise from its surface in regiments,

forming flame-shaped or hyphæ-like masses slowly lengthening, shortening and disappearing. They climb up the sides of a Petri dish and escape from it, or up pieces of wood projecting from the fecal mass. They actively penetrate into any fissures they meet, "thigmotaxis," and by the help of the resistance of the walls of these actively force themselves out of the encircling cuticle of the 2nd ecdysis. The fissures which they naturally seek are hair follicles or horizontal fissures in the epidermis, and at the entrance of these they leave their skins, they require the help of neither the gastric nor pancreatic juice to help them in escaping. It may be here mentioned that Looss has never suggested, as has been attributed to him by Manson, that the journey of the larvæ through the lungs is required to enable them to develop a resistance to the gastric juice. They are unaffected by the gastric juice before their passage through the lungs. The significance of this journey will be seen later.

Infection by the mouth has never been denied by Looss, it is established by experiment, and has been used by Looss in the infection of dogs. Infection by the skin was discovered and established by Looss. As its details are not generally available, it will be worth while to extract them in some detail. Looss found himself infected by ankylostomes, and did not believe it possible that this could have occurred by mouth, because, owing to the prevalence of cholera in Cairo at that time he was using stringent antiseptic washings before food. With this problem in his mind he allowed inadvertently a drop of a culture of mature ankylostome larvæ to drop on the web of skin between two fingers of his hand, while he was feeding a guinea-pig with the culture. There followed a burning sensation with reddening of the skin. He had to settle whether this was due to penetration of the larvæ or to irritating excretions from these dissolved in the water. A drop of the culture water free from larvæ produced no effect on his skin. A drop containing numerous larvæ was spread out on the skin of the forearm, burning and reddening began almost at once, and a scraping of the epidermis showed that there were very few larvæ left upon it but many empty skins. Obviously the larvæ had penetrated his skin leaving their sheaths behind. This was confirmed in the person of an Egyptian boy whose leg had to be amputated. An hour before this was done Looss applied a culture of mature larvæ to the skin of the leg, and subsequently found them in fissures in the skin, in hair follicles, and beginning to penetrate the corium. He concluded that the larvæ actively bore their way from skin to intestine, and his next experiments were devised to surprise them on the journey. He infected young dogs through their abdominal wall with ankylostome larvæ of 24 hours later, they were present in the skin, subcutaneous tissue and in the gut,

but not in the intervening muscle or peritoneal fluid. As they had not reached their destination direct, could they, he wondered, have done so by penetrating the subcutaneous tissue till they reached mouth or anus. A fresh series of experiments to test this point ended in complete failure. Larvæ penetrated the dermis in shoals and then disappeared. A more minute examination of the dermis showed some larvæ in veins and lymphatics. If this were normal, then they would be carried passively to the lungs, could just as easily escape from the capillaries there as they could penetrate those of the skin, and passing up the trachea reach the stomach and intestine by being mechanically swallowed. An experiment on these lines showed about 500 larvæ from a scraping of the lower 3 cm. of the tracheæ, and many more in the alveoli, bronchi and gut. This experiment has been amply confirmed. In the gut the larvæ undergo two more ecdyses, with the last of which they obtain their adult form. Sambon, however, doubts whether the trachea-œsophagus part of the journey is more than conjecture, and believes that the larvæ would reach the gut by a safer and more direct route. He offers no proof of this, but puts forward these objections to Looss's conclusions: (a) Immature forms have never been found in the stomach, except beneath the epithelium, and are invariably absent from the duodenum, (b) They have been found in all sorts of positions all over the body, (c) In a heavy infection an intensely hæmorrhagic condition of the jejunum occurs at the beginning of the infection, and it is reasonable to attribute it to penetration of the larvæ into the gut from outside, (d) Immature forms have been found again and again in blood spaces beneath the intestinal mucous membrane, (e) Certain other worms among which are seleiostomes are found beneath the mucous membrane. Looss replies thus: (a) Looss has found immature forms by hundreds in the cavities of the stomach and intestine 24 to 48 hours after infection, (b) "Straying" is a constant phenomenon in a small proportion of penetrating helminth larvæ, the real route is that taken by the vast majority of them, (c) When hæmorrhage occurs, it does so late, about 9 days after infection, and coincides with the last moult of the larvæ and the first use of the permanent toothed mouthparts, (d) Looss can find in the literature no evidence of anyone having found these forms within the last 30 years, (e) Seleiostome larvæ cannot penetrate the skin, and if they have been found in subcutaneous cysts, they must have reached them from the lumen of the gut.

The pathological changes produced in experimental animals by a heavy infection of larvæ are—After 3 hours or more strong diarrhoea or frequent micturition, retching or even vomiting, an intense irritation of the skin with swelling and possibly vesication, and accompanied by a

large exudation of leucocytes and a smaller one of red cells, hæmorrhages into the skin lymph glands and lungs, which in the last case may be so extensive that the animals die of suffocation. No openings have been found in vessels, and the somewhat late appearance of the hæmorrhage points to its having a toxic source of which there is a possible confirmation in the fact that the excretory neck glands are well developed by the time the larvæ reach the trachea.

Experiments have been conducted by Fulleborn and Schilling-Torgau (quoted by Leiper in the first number of the *Journal of the London School of Tropical Medicine*) subsequent to the completion of Looss's monograph, in which the bringing of the trachea or œsophagus out through an opening in the neck almost entirely prevented a very heavy cutaneous ankylostome infection, though larvæ in swarms were recovered at the fistula. In controls intestinal infection was intense, while the few parasites which reached the gut in the fistula experiments are sufficiently accounted for by "straying." Looss looks on infection by the skin as the primitive method, that by the mouth as secondarily acquired, a view supported by the fact that Fulleborn and Schilling-Torgau have found that when strongyloides larvæ are swallowed, they penetrate the wall of the stomach and reach it again by making the circuit through the lungs. This paramount intensity of the instinct of thigmotaxis points to its ancient hereditary character. Biological reasons allow of great reasonableness in the inference that ankylostome larvæ act in the same way, and that so far from their never, as Sambon thinks, making the circuit of the lungs, they possibly always do so, even when swallowed. The route of infection established for dogs must, Looss holds, be good for all ankylostome hosts, including of course man.

Evidences of the reaction in human beings to the migration of larvæ are cited as follows—There are four kinds of skin affection definitely associated with ankylostomiasis: (1) of "creeping eruption" caused by the wandering of a single strayed larva either before or after passing through the lungs, (2) "ground-itch" characterised by erythema with macules, papules, vesicles, pustules and intense irritation, (3) "Mazanmorin," a New World disease, evidently identical with ground-itch, (4) "Bunches," "Gonimies," "Kratze," a miner's disease characterised by boils, urticaria and general pruritus. It is significant that in older writings, before the cause of miners' anæmia had been discovered, and while medical men were, with open minds, collecting all evidence about it, several observers had noted that there occurred in sequence first the "gonimies," then a bronchitis so closely associated with the eruption as to be called by the miners "catarrhe des gonimies," and lastly, the anæmia. When intestinal worms had been

established as the cause of the anæmia, and any lung complication seemed accidental, these then drop out of the accounts of the disease till after the publication of Looss's discovery when they begin to appear again. The duration of skin and lung symptoms is short, and their intensity depends on the number of larvæ penetrating, though even a single larvæ doing so may cause a papule, like that due to the bite of an insect. Necatosis seem to produce greater irritation than ankylostomes, it is greater too when the larvæ penetrate from certain media, and if there is a secondary infection of micro-organisms.

Regarding the comparative frequency and practical significance of the two modes of infection, Looss makes these observations:

Clear drinking-water is not infective, for the larvæ cannot swim and so cannot leave even a heavily infected muddy bottom. Uncooked vegetables cannot be of much practical importance, for though raised in the country, where ankylostomiasis is common, they are eaten in part in the towns, where, in spite of this ankylostomiasis, is rare. Eating with soiled hands must be a rare method of conveyance, for in this case larvæ must pass *into* the mouth alive, if the dirt on the hands has dried, the larvæ have died, if it is moist, they mainly at least have already penetrated the skin. Conveyance by air seems practically impossible on account of the accompanying drying and death of the larvæ. Considering the comparative frequency of the two routes of infection, Looss points out that larvæ can only be passively carried to the mouth by transitory brief actions, and by the sole means of the hands, whereas they can actively penetrate the skin in any part of the body (including of course the hands), and for the whole period that a man stays in infected surroundings, and the latter route seems to him so incomparably more favourable that if only 10 per cent of the larvæ penetrating the skin reach the gut, they will outnumber the individuals which can be swallowed alive in the same time. In drawing this conclusion, Looss assumed that the larvæ which reach the stomach by the mouth are in the same position as those which have reached it through the skin and lungs, but, as has been pointed out, this is not necessarily so. They probably have still to go through the lungs, and run the risk of getting lost. Thus, if proved, will immensely increase the practical importance of the skin as the portal of infection, and at the same time make prevention more difficult, for in practice it is absolutely impossible to protect the whole skin of those liable to infection through it.

For the practical diagnosis of the presence of ankylostomes the following methods are recommended—Colonless eggs, such as those of ankylostomes, must be searched for with the diaphragm of the microscope stopped down, or the condenser lowered. Looss searches 3 large slides, the area of the cover-glasses on each

being 47×28 mm. This is equivalent to the area covered by 17 cover-glasses of $\frac{3}{4}$ inch square. After careful examination of this quantity of diluted faeces with a mechanical stage, he feels that he can give a fairly correct opinion as to whether the faeces contain eggs. If a concentrated amine staining fluid in a thin layer be used for dilution with a maximum amount of light, the eggs stand out colourless against the coloured background. If the stool is watery, it should be allowed to stand all night and the sediment examined in the morning. Directions for recovering worms are these—Put the stool passed after a vermifuge into a bucket of water and run in water forcibly from a tap, or, if this is not available, pour in water and stir sediment for 3 minutes (5 for strongyloids, trichocephalus and tapeworm heads), pour off the water, and repeat so long as this is thick. When clear, pour the sediment into a flat glass dish and pick out the worms against a dark background.

C L

Correspondence

INTESTINAL PARASITES IN THE WARDHA DISTRICT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In an interesting article under the above heading Captain Reaney quotes me as saying that Santonin will often expel round worms in cases where no ova have been found in the feces, and says that he cannot agree with this statement. It is a curious fact how constantly this same question has cropped up on the borderline between medicine and helminthology, I mean the failure to recognise that no amount of negative evidence can invalidate a single positive finding. The most recent conspicuous examples of which have occurred among critics who failed to confirm Looss skin route of ankylostome infection and have consequently refused to accept it. In the paper to which Captain Reaney refers I investigated further, in 9 cases, my failure to find ova when worms were subsequently passed. In two thirds of them there was no possibility of ova being present, for the worms recovered were either immature or males only, and these 6 cases are in themselves sufficient to establish my statement. Regarding the other 3 cases, in which females were passed though no ova had been found in the feces, the whole matter hinges on the amount of feces examined under the microscope. In the investigation under criticism I expressly limited myself, as I there stated to an examination of 2 slides, that is, to the amount of diluted feces lying under two $\frac{3}{4}$ inch covers, an amount which I considered as much as a busy man was likely to undertake. Captain Reaney has not mentioned how much fecal matter he examined in each case, but I would point out that those with most experience and authority insist that in order to obtain, by examination of feces for their eggs, an estimate approaching accuracy as to the presence or absence of helminths in the suspected host, an amount of dilute fecal matter corresponding to that covered by 10 (Ransome) to 20 (Looss) $\frac{3}{4}$ inch square covers, and taken from several parts of the fecal mass, is requisite. As I intentionally restricted myself to an examination of from one tenth to one fifth of the amount of feces requisite to insure absolute accuracy, it follows that of necessity there must have been cases where ova were really present but were not found. Had this not been so, I should have been justified in suspecting my assistants of being too anxious to please. The conclusion emerges that with the examination of a restricted amount of feces a certain percentage of cases of ascari infection escape recognition by the microscope, and that in a further percentage of cases even the most industrious will fail to find the eggs, because the ascari in the gut of the host are physiologically incapable of producing them.

Yours, etc,

CLAYTON LANE, N D (Lond),

BERHAMPTON.

MAJOR, I.M.S.

TREATMENT OF AURAL SEPSIS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your February number of page 68 you publish a communication of Dr Fink on the treatment of aural sepsis by Parke Davis & Co's Chlorotone Inhalant. With due regard to the mode of treatment by other surgeons, may I be allowed to offer a few remarks on the same subject. I myself strongly condemn the practice of syringing the ear in aural sepsis having experienced the same dangers as mentioned by Dr Stuart Low and Dr Fink, advocates of Kelvolin and Chlorotone Inhalant, respectively. These dangers are much more liable to occur in the outdoor department of a large hospital, where so many errors have to be seen though in a limited time at one's disposal, and where strict antiseptic precautions in every case are out of the question. It is in these cases where one stands badly in need of a simple method of treatment which could be entrusted to an ordinary dresser provided it be safe and efficient. The methods recommended by the above two surgeons necessitate the use of a special apparatus as well as the possession of a special skill to use them. But it is in the use of Hydrogen Peroxide that one finds the simplest method conceivable of treating aural sepsis. When we have to do is simply to wipe out the pus with a piece of clean wool and then put 3 or 4 drops of the Hydrogen Peroxide—which coming in contact with the discharges oxidises them, producing fizzing in the ear and bringing out all the discharges in the form of a froth.

This is wiped off from time to time till the action of the Hydrogen Peroxide is finished, which is shown by the stopping of the fizzing. The clear fluid is wiped off from the ear with a piece of cotton wool, and the meatus closed with a light plug of antiseptic cotton wool. The operation is done once, twice or three a day according to the severity of the case. I have a very large experience of the method and can speak with confidence of its safety and effectiveness. Some cases have been of several years' standing. Dr Fink speaks of the discharges stopping in less than a month. In most of my cases the discharge has stopped within a week. The treatment is so simple that a man can do it himself.

Yours, etc.,

M AZEEM, M A

KHAN SAHIB,

Assistant Surgeon

PESHAWAR

TREATMENT OF GALLSTONES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Any advance in Medical Science which has the merit of simplicity is more or less inevitably dubbed as nothing more than a fad or a fancy, by not only the lay public, but also by the profession at large. It is not very long ago that Professor Metchnikoff evolved his startling theories about the longevity of life, only to be met with by a storm of derision. As I have had personal experience of the treatment suggested by him, I feel compelled to give my testimony about the results of my case. I was a martyr to passage of Gallstones for the past ten years. Nothing seemed to ease the intense agony, which at one time brought on an attack of syncope. I consulted Surgeon General Benson who advised me to try pure chloroform in doses of four minims, on sugar three times a day. This, I must say, relieved the pain and sickness to a very great extent. My condition was, however, not cured and various I M S Officers whom I consulted, told me plainly that there was no alternative but the knife. I then went on a sea voyage, and benefited a great deal, but the old trouble returned. I was then advised to try sour milk containing the Bulgarian Bacilli "Streptothrix Dadhi," and did so as a regular part of my diet, and the results were little short of marvellous. Pain, sickness and the accompanying anorexia, and a feeling of general malaise seemed to vanish. Previous to this I had to maintain a rigorous diet of fish and chicken, and absolute avoidance of stimulants. Now I can eat and drink like any ordinary man and enjoy the best of health, and have put on weight. What then was the cause of my trouble? Was it Gallstone? And if so, how did the Bulgarian Bacilli act on the cause of the mischief? Whatever it is, the results are beyond my wildest dreams, and henceforth I reckon myself as an ardent disciple of Professor Metchnikoff. I cannot too strongly advise anyone who may suffer from passage of Gallstones to give the sour milk treatment a trial. Perhaps one of your numerous readers may be able to give an explanation of this supposed physiological action of the bacilli on the bile fluid.

Yours, etc.,

TUTICORIN

W J D

A PROVIDENT FUND

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I shall feel very much obliged should you be able to find some space for the following few lines in the pages of your valuable Gazette.

The Government of India had very kindly, in their letter, No 2986—D Finance Department Resolution, dated Simla, the 14th June 1909, sanctioned the Establishment of a General Provident Fund for the benefit of all the Government servants in the Civil Department under which a certain percentage of their salaries which their recipients consent to spare is deducted and deposited in the Government Treasury.

The benefit derived from such a fund is too obvious to need any comment. It is certainly a boon to those who are themselves unable to lay by any savings from their pay, and a still greater boon to their dependants under all circumstances. Furthermore, they enjoy the advantages of perfect Government security as well as compound interest on their deposits. This fund is run on similar lines to those of the Indian Family Pension Fund to which the officers in the Civil and Army Department subscribe.

Now, it will be a very great boon to the Military Sub Assistant Surgeons of the Indian Subordinate Medical Department if the Government be pleased to extend the provisions of the General Provident Fund to them also. Such an act of the Government is bound to be gratefully appreciated, not only by the Military Sub Assistant Surgeons, but also by the dependant families. Everybody naturally prefers to deposit his savings in the Government security to keeping his accounts in an Insurance or a Banking Establishment, which latter sometimes bring utter ruin in cases of their failure.

In bringing up this subject, I have every hope that authorities concerned would very kindly take into their favourable consideration my humble proposal.

Yours, etc.,

MILITARY SUB ASSISTANT SURGEON

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The writer of this letter is an ex member of the I S M D (Sub Assistant Surgeon branch) who had served the Indian Government for about 10 years. He being unable to maintain within his pay, his position as a native Warrant Officer and his large family and after waiting for some years to enjoy the increased rates of pay for the sanction of which there seemed hopeful signs he was forced at last to resign in 1908.

He is a most faithful and loyal subject of the Government. He and his forefathers were connected with the I S M D branch and have eaten the salt of Government for years. In faithfulness to that salt, he takes this opportunity to lay before you the position of Military Sub Assistant Surgeons so far as their pay is concerned.

After his resignation also, he has been taking keen and sympathetic interest in the affairs affecting the Sub Assistant Surgeons both civil and military.

The Civil Sub Assistant Surgeons of the Punjab were granted the increased rates of pay from July 1910. The Military Sub Assistant Surgeons were jubilant at it and they believed that their increment of pay would soon follow or at any rate it would be announced and given effect to at the beginning of the next financial year. After some months' waiting they considered their lot was probably cast in with the Sub Assistant Surgeons of the North West Frontier Province, a number of which belong to the I S M D branch.

In the course of time the Civil Sub Assistant Surgeons of the N W F Province were fortunate enough to be granted the boon of an increased pay. On this the last hopes of the Military Sub Assistant Surgeons rested with the Coronation Durbar which has so gloriously passed away and the event made memorable on account of the grant of magnificent boons to the people of this country. The Military Sub Assistant Surgeon just stands where he was, envying the position of a Civil Sub Assistant Surgeon with similar qualifications but milder duties, enjoying an increased pay accompanied by the chances of private practice open to him.

Being impelled by most loyal and faithful motives, I beg to request you as the protector of the I S M D to have the memorials of the Military Sub Assistant Surgeons attended and acceded to. The increment of pay of this branch will not only improve the status of its members but will also make it more attractive.

I beg to remain,

Sir,

Your most obedient servant,

(Sd) ABDUL AZIZ,

SUB ASSISTANT SURGEON,

Medical Practitioner

THERAPEUTIC NOTICES, &c

THE Anglo-American Pharmaceutical Co of Croydon, London, send us samples and literature of PEPTENZYM in 5 grain tablets which is claimed to be a most reliable remedy in various forms of gastritis and dyspepsia.

Messrs Witherby & Co are shortly publishing for Mr P H Bahr two important Reports, the one on 'Filaria and Elephantiasis in Fiji,' and the other on 'Dysentery in Fiji.' The Reports embody the results of a year's study of these subjects in Fiji, and are to be illustrated with plates in colour and monochrome, and charts.

THE name of the Firm which is advertising COLALIN is H and T KIRBY, Ltd, and not as spelt in our January issue.

Horlick's MALTED MILK is recommended as the "best night cap." It is certainly nourishing and assimilable and easily prepared, and is probably much preferable to any alcoholic stimulant as a "night cap."

A correspondent writes—As a layman who has unfortunately been obliged to remain for long periods under the care of doctors and nurses, I was very much struck by the following passage which I came across in a recent book on disinfection. The author, who is discussing the antiseptic precautions to be taken by surgeons and nurses previous to an operation, writes—"Very little attention is usually paid to the cleansing of the mouth yet when it is remembered that the saliva contains a larger number of micro organisms than the worst sewage, that streptococci and staphylococci are amongst the most numerous of these, and that they are proved to pass into the air in loud talking or coughing, it would appear worth the surgeon's while to take into account a cavity which comes so near the operation wound." He goes on to state that direct experiment proves that five minutes gargling with chlorine water, 2 per cent solution of permanganate of potash, or 1 per cent IZAL will reduce the number of organisms in the saliva for more than an hour to something like 6 per cent of their original number.

Ammonium Chloride vapour is usually inhaled by the mouth, but in some cases it is preferable to inhale through the nostrils and allow the vapour to escape by the mouth. For this purpose a new nasal attachment has been introduced by Messrs Burroughs Wellcome & Co. Instead of twin bulbs to go inside the nares, an expanded orifice with flanged edges is used. It is made of glass and so shaped as to be adapted to the physical configuration of any patient.

The orifice is placed in position beneath the nose and the depression in the centre permits the flanged edges to enclose the outer edges of the nares.

This method is to be preferred both on æsthetic and hygienic grounds. The new nasal attachment is fitted with a rubber plug for the reception of the ordinary mouthpiece of the "VAPOROLE" AMMONIUM CHLORIDE INHALER, thus rendering the complete outfit suitable for either nasal or oral inhalations.

Considerable interest has been aroused in medical as well as in pharmaceutical circles by Dr Charles J Macalister's recent communication (*British Medical Journal*, Jan 6, 1912) on the value of Allantoin as a cell proliferant. Symphytum Officinale Common Comfrey, has from time immemorial been recommended as a dressing for wounds, and Dr Macalister was able to confirm its properties in this direction in a case of rodent ulcer. An investigation into the constituents of the root carried out at his suggestion, established the fact that it contained about 0.8 per cent of Allantoin, a body also present in the fatal allantoinic fluid, and in certain vegetable foods.

Dr Macalister, as well as other investigators, treated a number of cases of ulcers, burns, etc., with a 0.3 to 0.4 per cent solution of Allantoin and obtained highly satisfactory results: the increased growth of epithelium and the hastened healing process under the influence of the Allantoin dressings being most marked. The Chemical Works of E. Merck Darmstadt, which have prepared Allantoin since 1879, are in a position to supply a pure preparation.

Mr E. Merck informs us that, judging from the orders already received for this product, it is being extensively used. Mr E. Gohner, Fort, Bombay, has been provided by Mr Merck with a stock of Allantoin and will therefore be in a position to promptly fill orders for this product. See also *B M J*, 10th February, 1912.

Service Notes

I M S DINNER AT NAGPUR,
CENTRAL PROVINCES

On the 8th of February the whole of the I M S Officers in Civil employment in the Central Provinces were invited

to a dinner given by Colonel Dennys, Inspector General of Civil Hospitals, at the Nagpur Club to meet Surgeon General Sir Pardy Lukis, Director General of the I M S, who was expected to visit the station.

Unfortunately a telegram was received at the last moment to say that Sir Pardy Lukis had been compelled to cancel his visit owing to urgent business at Calcutta.

Eighteen I M S Officers sat down to dinner, i.e., every I M S Officer serving under the Local Administration of the Central Provinces with the exception of one who was unable to leave his station owing to a severe outbreak of plague.

The following Officers were present—
Colonel G W P Dennys, Lt Col H E Banatvala, Lt Col W D Sutherland, Lt Col A Buchanan, Major F P Chapman, Major N R J Rainer, Major P K Chitale, Major F O Mell, Major C H Bensley, Major T G N Stokes, Captain G Fowler, Captain T C Rutherford, Captain J M A Macmillan, Captain M F Reaney, Captain W Tarr, Captain W J Fraser, Captain C C Shaw, Captain W J Powell.

After dinner Lt Col Banatvala, in a few well chosen words, proposed the health of Colonel Dennys, which was enthusiastically drunk.

Colonel Dennys, on rising said, he had to apologise to all the Officers present, many of whom had come from very long distances, for having brought them to Nagpur under false pretences. He said it had been a bitter disappointment to them all that Sir Pardy had had to cancel his visit, but he felt sure that Sir Pardy himself fully shared in the disappointment.

After briefly sketching Sir Pardy Lukis' brilliant career from the days when he and Colonel Dennys were Medical Students together at St Bartholomew's Hospital thirty seven years ago, when many of the rising young officers he saw before him that evening were either in their cradles or had not come into existence at all, up to the date when Sir Pardy was decorated with the K C S I at the Delhi Durbar, which had caused universal satisfaction throughout the service. Colonel Dennys pointed out that of recent years the Central Provinces had only been visited by three Directors General viz., by Surgeon General Harvey in 1897, by Sir Benjamin Franklin while he was D G and more recently by Sir Gerald Bomford. But though these Provinces had not been very fortunate in receiving visits from Directors General, they had been far from backward in supplying the service with distinguished Officers, who had risen to high positions. Surgeon General Rice, Sir Gerald Bomford, Colonel Harris, Colonel McKay, Colonel Quayle, and Colonel Roe had all at one time or other been Civil Surgeons of Nagpur. Sir Benjamin Franklin was formerly Civil Surgeon of Jubbulpore and Surgeon General Sir Adam Scott Reid was once Administrative Medical Officer of the Central Provinces, before the appointment was converted into what is now known as Inspector General of Civil Hospitals.

But this, he believed, was the first I M S dinner that had ever taken place in the Central Provinces. He hoped it would not be the last, and that he would have the pleasure of seeing most of the officers now present at Nagpur again at a similar dinner next year, when it was to be hoped Sir Pardy Lukis might be present.

Col Dennys said that personally he was a great believer in these gatherings of I M S Officers, whereby they were given an opportunity of knowing one another. In this way only could the service maintain that *esprit de corps* which it was so desirable should exist among its members. The fact that they knew each other, had dined and made merry together with the aid of the flowing bowl, must of necessity go a long way towards establishing a friendly feeling. He recalled the many occasions when, in his earlier years, he had made long journeys in the blazing heat of June, to be present at the I M S dinners held at Simla, and that at these dinners he had made the acquaintance and sometimes life long friendships of men in his service whom he might never otherwise have known.

Col Dennys then referred to the feelings of bitter disappointment with which the service had heard the news that the scheme for Station Hospitals in the Native Army had been finally abandoned by the Govt of India, for financial reasons. He believed that the scheme had no stronger supporter than the present Director General, Sir Pardy Lukis. It was in his opinion the only possible way of making the Military side of the I M S more popular than it had been of late years. He went on to say "We have all to remember the purely military nature of our Service, that we in Civil employment are only temporarily lent to Local Governments and Administrations, and but for the fact that it is essential the I M S should maintain a strong reserve in the event of mobilisation on a large scale, the Civil side of the Service might cease to exist altogether."

We should therefore all bear this fact in mind and endeavour to foster good feeling between ourselves and our I M S brothers on the Military side, I will go even further than this, gentlemen, and say that as members of the

I M S and the R A M C, all belong to the same grand scientific profession of which we are so proud, there should be no reason whatever why members of both services should not be on the best of terms."

In conclusion, Colonel Dennys asked his guests to drink to the health of the Indian Medical Service coupled with the name of its Director General, Sir Pardy Lukis.

Captain Fraser, being the most junior officer present returned thanks for the Service in a witty little speech, in which he expressed a hope that all the officers present would in their turn rise to the high positions attained by some of the late Civil Surgeons of Nagpur.

The next day a Conference of I M S Officers was held at the office of the Inspector General of Civil Hospitals, at which a variety of extremely interesting subjects were discussed to the mutual advantage and edification of all present.

MORE DAYS IN THE I M S

In the December issue of our admirable little contemporary the *Guy's Hospital Gazette* an interesting article appeared signed F. A. B., with the above title which no doubt many of our readers will care to read—

"One of the attractions of the service to which the writer has the honour to belong is the infinite variety of work which he may be called upon to perform, or from which he may, to a certain extent, choose according to his bent. Besides the well known Regimental and Civil Surgeoncy branches the I M S man may become a Professor at one of the medical colleges, and enjoy all the kudos and benefits that appertain to such appointments out here as at home. He may travel far a field in the Political Department or lead a sailor's life as Surgeon Naturalist to the Survey Department. He may become a State Chemist or Assayer, or spend his days with the multitudes of micro organisms in the Bacteriological Department. He may specialise in plague, rabies, or malaria, and hold a roving commission in the latter branch over a territory nearly as large as England or he may study the care of children as medical officer to one of the big Government schools at a hill station.

All these in addition to medicine, surgery, midwifery, ophthalmology, sanitation, and the prevention of disease, etc. are open to the medical man who joins the I M S, and many days out of those lives (both at work and play) have already been described in the columns of the *Guy's Gazette* by the facile pen of Captain Hugh Watts.

There is however, still another branch that has not yet been mentioned, but which, owing to its size and importance, ought to be known to all who may be thinking of joining the Service, and that is the Jail Department. This may not sound attractive to those just finishing a strenuous hospital career, but it possesses many advantages. Of these may be mentioned especially an increased rate of pay, coupled with a free and usually excellent bungalow and a fully settled home. Also the I M S officer is far more his own master as a Jail Superintendent than he is when in military employ, and there are many opportunities not only for good surgical and medical work, but also for the exercise of talents in many other directions.

A central jail consists of 1,000–2,000 convicts, with the necessary establishment of officials and warders and many a practitioner in England cannot claim to have as large a number as this to look after even in a medical capacity. But to the Superintendent of such a jail the medical work is only one part of his duties. He is also responsible for the sanitation of the jail, for the food and clothing of the inmates, for their daily tasks (which must include a working knowledge of many and varied trades) and for their discipline. The latter means a constant study of the native mind and character, and watchfulness against crime, the trial of all breaches of law and discipline and the suitable punishment of the guilty parties.

All these duties involve a great deal of responsibility, and every anna of the increased pay is more than earned.

While the care of a large jail usually absorbs every spare minute of the Superintendent's time there are smaller jails to the care of which subsidiary duties are attached such as the Civil Surgeoncy of the neighbourhood, or possibly a lunatic asylum. Superintendents also are not debarred from private practice and their permanent position in a place enables them to secure the confidence of the native inhabitants, a confidence which is always a necessary preliminary to obtaining lucrative patients.

An appointment involving both jail and civil surgeoncy work I hope to describe in a future letter, in this I will conclude by detailing briefly the main items of a Jail Superintendent's day.

Up at, say, 5.30–6 A.M., he will arrive at the jail about 7 o'clock, and the free wander guard will turn out to salute and be inspected. If it is the usual weekly inspection day, he will visit all the blocks of the jail, examining the kit and appearance of each convict, hearing petitions, examining into complaints, picking out sickly individuals for weight or hospital treatment, and investigating the sanitation of the jail. He will then walk through the gardens,

factories, and workshops, watching the convicts at their tasks, encouraging the keen ones, spurring on the lazy, and discussing the while with his subordinates various means of improving the plant, increasing the profits, and lessening the cost of production.

On reaching the hospital, he drops the role of manager of a large commercial concern and becomes, as of old, the keen surgeon or physician. A few fever cases await microscopic diagnosis, a few dysenteric patients are injected with vaccine, an operation, a head injury from an assault, a row of skin cases, and a few malingers delay him for a while and then the hospital "returns" are written up and the Superintendent goes back to his office. Here there is awaiting him a row of convicts for trial, their possible offences being too numerous to mention. The guilty ones are suitably punished with periods of fetters, handcuffs, separate confinement and so on, and then the storekeeper or jailor comes along with a pile of books and papers relating to the trades and supplies generally of the jail.

Lastly, the varied correspondence appertaining to such a large establishment is dealt with and the Superintendent returns about 10 P.M., hungry and tired, to his morning meal.

If he is wise, he will keep the rest of the day as free as possible from jail work, but extra duties, such as surprise visits at the time of the evening meal or matters of urgency, are always liable to claim his attention. Time for recreation in the cool of the evening can usually be obtained and every man should have one or more hobbies (medical or otherwise) to prevent him from becoming narrow minded, but the fact that the writer has been over a year in fulfilling his promise to the Editor to write these few notes shows (not that he is lazy, much as it may appear so) but that very little time is left for outside interests important though these are.

There is one consolation to a Superintendent who feels that his jail work absorbs all his time and thought and that the work in itself is so varied, and that there is always the possibility of a mild excitement, such as an attempt at escape or suicide, an assault (on himself or his staff) or even a rising in the jail. I know one jailor, who in his younger days was a well known boxer in a British regiment, who has lived for years in almost daily hope of a "bit of a scrap" but this hope luckily does not make him relax in the least his vigilance in the detection of signs and symptoms of discontent or insubordination. That the most competent of Superintendents may have to face a sudden rising was shown last year when Lt. Col. Jennings, I.M.S., had to suppress an *amate* at Fitchgarhi in the course of which about fifty convicts were killed or injured. Similarly, at some jails in unhealthy localities, the Superintendent can never feel sure on retiring to rest at night that he will not find an epidemic of cholera or plague in full swing in the morning.

THE following Annexure to Indian Army Order No 96 of 1912 is here republished for information—

(Wearing of Decorations and Medals in the several orders of dress.)

Review Order

Riband and badge of a grand cross

All stars of orders

Knights Commanders and Commandors of one order will wear the badge of that order round the neck, and Knights Commanders and Commandors of two or more orders will wear the badge of the senior order round the neck. They may also wear the badges of one or more of the other orders.

When the collar is worn, the broad riband of the grand cross of the same order is not worn.

Review Order (Staff in blue)

Small ribands of the width of the companionship or membership of orders and of medals, half inch in length on the breast. (b) (c)

The star of the senior order only is usually to be worn to the left, and just clear, of the left hand side row of buttons, but when specially directed, the star of another order may be substituted. (b) (c)

The riband and badge assigned to a Knight Grand Cross, Knight Grand Commander, Knight Commander, or Commander of an order, is not worn. (a)

Mess Dress

Miniature decorations and medals will be worn. Miniature decorations will be of the same size as miniature medals, and Knights Grand Cross, Knights Grand Commanders, Knights Commanders and Commandors, will wear the miniature of the companionship or membership. (a) (b) (c) (d)

Undress and Service Dress

Small ribands of the width of the companionship or membership of orders, and of medals, half inch in length, on the breast. (b) (c)

Evening Dress, Plain Clothes

Broad riband and badge of a Grand Cross with star of the order and stars of all other orders, on state, public, and official occasions

Knights Commanders and Commanders of one order, of which the star is worn will wear the badge of that order round the neck, and Knights Commanders and Commanders of two or more orders of which the stars are worn will wear the badge of the senior order only

Miniature decorations and medals on the lapel of the coat
(a) (b) (c) (d)

Only one set of miniatures need be maintained. The miniatures of companionship or membership will not be removed when the riband or badge of a higher grade is worn by Knights Grand Cross, Knights Commanders, etc.

NOTE—(a) The Order of Merit is never worn in miniature, and on all occasions must be worn round the neck

(b) Foreign decorations which are permitted to be worn on certain occasions only, will be worn in review order, in mess dress and in evening dress (plain clothes), on the occasions specified in the letter of authority only, on the left of all other decorations and medals. The ribands of such decorations will not be worn on the breast in review order (staff in blue), or in undress or service dress. The star of such a decoration will only be worn in review order (staff in blue), when specially directed. Miniatures of such decorations will only be worn on the occasions mentioned in the letter of authority when mess dress or evening dress (plain clothes) is worn

(c) A foreign war medal the wearing of which has been sanctioned by His Majesty or its riband or miniature will be worn in all orders of dress in the same way as a British medal

(d) The buckle will be omitted from the miniatures of the "Bath" and "St Michael and St George" when worn by Knights Grand Cross and Knights Commanders of those orders

REFERRING to his friend Dr H E Busted, I M S, whose death we have recently chronicled there is a story told by Sir Henry Cotton in his recent book *India and Home Memories* (p 137) —When Busted was appointed Assay Master at the Calcutta Mint, he went to Sir R Temple who was then Finance Minister to thank him for having selected him though a Madras man, for a Bengal billet—"Not at all" replied Temple with his peculiar lisp—"Thos Tyrusve mihi nullo discrimine agetur"

THE result of the recent competition for commissions in His Majesty's Indian Medical Service which was held at the Royal Army Medical College and at the Examination Hall, Victoria Embankment on the 22nd, 23rd, 24th, 25th, 26th, and 27th January 1912, was announced on Saturday. The following are the names of the successful candidates arranged in order of merit, and the marks obtained by each—

Ronald Herbert Candy, M B, F S Lond, L R C P, M R C S, London Hosp	3,447
Philip John Veale, M B, B S, Lond, Bristol Univ Hosp	3,376
Henry Hingston, M B, B S, Lond, Westminster Hosp	3,358
Jamasp Cursetji Bharucha, L R C P, M R C S, London Hosp	3,338
Frederick Jasper Anderson, L R C P, M R C S, St Bartholomew's Hosp	3,254
Herajee Jhangir Maneckjee Cursetjee, M B, B S, Cantab L R C P, M R C S, LM and S Bombay, Camp Univ and London Hosp	3,191
John Simson Stuart Martin, M B, CH B, Edin, Edin Univ	3,094
Peter Fleming Gow, M A, M B, CH B, D P H, St Andrews, St Andrew's Univ	3,093
Robert Victor Morrison, M B, CH B, Edin, Edin Univ	3,019
Joysh Chandra Dey, M B, Calcutta, Calcutta Medical College	3,006
James Walker Jones, M B, CH B, Glasgow, Glasgow Univ	2,992
James Hill Hislop, M B, CH B, Glasgow, Glasgow Univ	2,958

NOVARIATION of Field Medical and General Medical Store Depots of the Field Army—The designation of the above mentioned units are to be as follows to accord with those in other parts of the Empire—

(i) "Field Medical Store Depot" to be "Advanced Depot of Medical Stores"

(ii) General Medical Store Depot" to be "Base Depot of Medical Stores"

Field Service Manuals and War Establishments should be amended accordingly

EXAMINATION of Officers for Promotion—Grant of "Special Certificates"—The undermentioned officers having obtained the necessary percentage of marks allotted to the examination for promotion have been awarded "Special Certificates" in accordance with Army Regulations India, Volume II, Appendix XXIV—

Lieutenant B Gale M B, Indian Medical Service

Lieutenant R E Flowerdeew, M B, Indian Medical Service

WITH reference to Army Department notifications Nos 282 and 822, dated the 7th April and 29th September 1911, respectively the promotion from Captain to Major of the following officers, published in the notifications quoted in the margin, is antedated as shown against their names—

Ernest Alan Robert Newman, M D from 29th July 1905 to 30th January 1905

Reginald George Turner, F R C S from 29th July 1905 to 30th January 1905

James Davidson, M D, from 29th July 1905 to 30th January 1905

Bhola Nanth from 29th July 1905 to 30th January 1905

Charles Ross Pearce, M B, from 28th July 1906 to 29th January 1906

Samuel Evans, M I, from 29th January 1907 to 29th July 1906

James Haldane McDonald, M B, from 29th January 1907 to 29th July 1906

Arthur Frederick William King, F R C S E, from 29th July 1907 to 29th January 1907

Andrew Armstrong Gibbs, from 29th July 1907 to 29th January 1907

Thomas Edgar Watson, M I, from 29th July 1907 to 29th January 1907

Clarence Barrymore Harrison, M B, from 29th January 1908 to 29th July 1907

Nicholas Pirell O'Gorman Lalor, M B, from 29th January 1908 to 29th July 1907

Herbert James Walton M D, F R C S, from 29th July 1908 to 29th January 1908

Maxwell Dick, M B, from 29th July 1908 to 29th January 1908

John George Patrick Murray, M D F R C S E from 28th July 1909 to 28th January 1909

Alfred George Sugent, from 28th January 1910 to 28th July 1909

THIS is a very important notification in reference to accelerated promotion. These officers for various reasons had either not been able to qualify at the time other members of their batch came up for accelerated promotion or the degrees or course of study were not then considered sufficient. All these cases have therefore been reconsidered and the result is that these officers are restored to their previous places on the list of their batches

LIEUTENANT COLONEL J CHAYTOR WHITE, I M S, Sanitary Commissioner, United Provinces has been granted by His Majesty's Secretary of State for India extension of three months' leave on medical certificate

CAPTAIN H W ILLIUS, I M S, Civil Surgeon, was on study leave from the 4th September to the 21st December 1911

CAPTAIN H W ILLIUS, I M S, Civil Surgeon, has been granted by His Majesty's Secretary of State for India, permission to return to duty

CAPTAIN H W ILLIUS, I M S, Civil Surgeon, on return from leave, to Jhansi

CAPTAIN I M MACRAE, I M S, Officiating Superintendent, central prison, Lucknow, whose services have been permanently placed at the disposal of this Government by the Government of India Home Department, to be confirmed in that appointment from the 16th December 1911 to fill an existing vacancy

MAJOR E J O'MEARA, I M S, Civil Surgeon, on completion of his special duty, to Agri

MAJOR G T BIRDWOOD, I M S, Civil Surgeon, from Mussoorie to Agri as a temporary measure and then to Lucknow

MAJOR C MILNE, I M S, Civil Surgeon, from Jhansi to Mussoorie

CAPTAIN L J M DEAS, Indian Medical Service, an Agency Surgeon of the 2nd class, is posted, on return from furlough, as Agency Surgeon, Eastern Rajputana States, with effect from the 26th January 1912

CAPTAIN H H THORBURN, Indian Medical Service an Officiating Agency Surgeon of the 2nd class, is posted as Civil Surgeon, Wana, with effect from the 9th February 1912

THE services of Captain H Watts, I M S, Plague Medical Officer, Lahore, are replaced at the disposal of the Government of India, Department of Education with effect from the date he relinquishes charge of his duties, Captain Watts is transferred to the Central Provinces

MAJOR H AUSTEN SMITH, M D, I M S, Civil Surgeon and Principal of the Medical School Agra, succeeds Lt Col Melville, I M S, as Civil Surgeon, Simla, E

LIEUTENANT COLONEL ROBERT SHORE, M D, Indian Medical Service, Bengal, is permitted to retire from the service subject to His Majesty's approval, with effect from the 25th December 1911

LIEUTENANT COLONEL SHORE was an M D, of the Royal University of Ireland, now extinct. He was awarded the Kaiser's Hind Gold Medal on 1st January 1906

UNDER the provisions of paragraph 19 of the Army Regulations India, Volume IX, the name of Major Cecil Charles Stewart Barry, I M S, Medical Officer of the Burma Railways Volunteer Corps is placed on the Supernumerary list, with effect from the 30th January 1912

IN continuation of Government Notification No 801 dated the 5th February 1912 His Excellency the Governor in Council is pleased to appoint Captain H E Stange Loathos, I M S, to act as personal assistant to the Surgeon General with the Government of Bombay in addition to his own duties from the date of departure of Captain J L Lunham, M B, B Ch (R U I), I M S, pending relief by Captain H S Hutchison, M B, I M S

AMONG the list of International Medical Monographs announced by Mr Edward Arnold is one on *The Protein Element in Nutrition* by Major D McCay, I M S, of the Calcutta Medical College

CAPTAIN J GOOD, I M S, Civil emp'oy, Burma, was on study leave from 10th October till 31st December 1911

CAPTAIN HUGH DUTTON, I M S, on general duty, Calcutta, was sent on special plague duty in Shahabad district from 13th February 1912

ON return from leave Captain C E Southon, I M S, is posted as Plague Medical Officer to Rawal Pindi

WITH reference to Punjab Government Notification No 31 (Home File), dated 15th January 1912 Captain J E Clements, I M S, made over charge of the duties of Superintendent of the Central Jail, Montgomery to Military Assistant Surgeon H W V Cox on the afternoon of the 31st January 1912, and proceeded to the United Provinces for duty

MAJOR R HEARD, I M S, Professor of Midwifery Medical College Lahore, has been permitted by His Majesty's Secretary of State for India to convert the period from 2nd October to 15th December 1911, of the furlough granted to him in Government of India, Home Department, Notification No 860, dated the 28th July 1911, into study leave

CAPTAIN C A GILL, I M S, assumed charge of the office of Deputy Sanitary Commissioner, Punjab, on the forenoon of the 2nd January 1912, relieving Major H M Mackenzie, I M S, transferred

HIS Excellency the Governor of Bombay in Council is pleased to appoint Assistant Surgeon Khan Bahadur Framroz Aideshir Moos L M & S, to act as Civil Surgeon, Thana, and Superintendent Narotandas Madhavdas, Lunatic Asylum, Naupada, in addition to his own duties, during the absence on deputation of Major K V Kukday, I M S, or pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to make the following promotions, *vice* Lieutenant Colonel B B Grayfoot, M D (Dur), I M S —

Major A Hooton, I M S, to be a Civil Surgeon of the First Class

Major V B Bennett, M B, B S (Lond), F R C S, I M S, to act as a Civil Surgeon of the First Class, *vice* Major A Hooton, I M S, during the absence on leave of Lieutenant-Colonel J B Smith, M B, M Ch (R U I), D P H (Cant), I M S, or pending further orders

Major H Bennett, M B, O M, B S C (Edin) F R C S (E) I M S, to continue to act as a Civil Surgeon of the First Class during the absence on leave of Lieutenant-Colonel O T Hudson, M R C S, L R C P, I M S or pending further orders

THE services of Captain F P Mackie, M B, F R C S, I M S, are placed at the disposal of the Department of Education

MAJOR A E WALTER, I M S, Superintendent of the X Ray Institute Dehra Dun, is granted combined leave out of India with effect from the 10th March 1912, *viz*, privilege leave for three months, with study leave for six months and furlough for three months in continuation

MAJOR E A C MATTHEWS M B, I M S, is appointed to officiate as Superintendent of the X Ray Institute, Dehra Dun, during the absence on leave of Major A E Walter, I M S, or until further orders

COLONEL C F WILLIS, I M S, was appointed P M O 9th Secunderabad Division, from 8th January 1912, *vice* Colonel Moberly, A M S, retired

CAPTAIN H C BROWN, to be in charge of the Brigade Laboratory at Jullundur, with effect from the 16th October 1911

CAPTAIN H FALK, to be in charge of the Brigade Laboratory at Abbottabad, with effect from the 10th January 1912

LIEUTENANT M J HOLGATE to be specialist in Electrical Science, 4th (Quetta) Division, with effect from the 1st January 1912

ON return from Sanitary work at the Delhi Camps Capt C A Gill, I M S, was placed on temporary general duty at the Lahore Medical College

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITORS *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage abroad

BOOKS, REPORTS, &c, RECEIVED —

Major O Gorman Lalors *The Italian Campaign against Malaria* (Thacker Spink & Co)
International Plague Conference Report, Mukden 1910 (Agents Thacker Spink & Co)
Sanitary Commissioner's Report, India
Supplement to Sanitary Report, E B & A, of 1910
J Grant's *The Chemistry of Breadmaking* Ed Arnold
R Howard's *House Surgeon's Vade Mecum*, 1911 Ed Arnold
Wellecome Laboratory Report, Khartoum, Vol B 18s (Baillière, Tindall & Cox)
Records of the Indian Museum, Vol VII, Part 1, Vol IV 8s and 9s Vol VI Part 5
Peckert's *Dental Caries* 7s 6d (Baillière, Tindall & Cox)
Howarth's *Laryngoscopy, Bronchoscopy &c* 15s (Baillière, Tindall & Cox)
Forgue's *Patterson's Sanitation for Indian Troops* Re 1-8 (Thacker Spink & Co)
O Gorman Lalors *Dispensary Code* Re 1-8 (Thacker, Spink & Co)
Sewell's *Indian Domestic Science* Longmans
Gray's *Health in Tropical Countries* (Bale Sons & Danielson)
French's *Laboratory Methods* H K Lewis
Roes *Cell Production* J Murray

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Dr Campbell Londonderry Dr Gangooly, Calcutta Lt Col Castor M B, Rangon Capt N Simpson, M B, Mily Asat Surgeon Sunker, Sauror Dr Milllean Capt Keates M B, D I Khan Major L Rogers, I M S, Calcutta Capt Strother Smith M B, R Pindi Lt Col H Smith M B, Amritsar Dr Dunlop Tuticorin Lt Col B Seton M B, Simla, Major Clayton Lane I M S, Berhampore Col G W Donny I M S, Nagpore

Original Articles

SURGICAL WORK AT THE PRINCE OF WALES' HOSPITAL, CALCUTTA *

REPORTED BY THE REGISTRAR

The following is an analysis, made by the Registrar, of surgical cases treated in the Prince of Wales' Hospital, Medical College, Calcutta, during the year 1911

HERNIA

Fifty-five cases of external hernia were treated, of which 52 were inguinal, 2 umbilical and one femoral. Twenty-three were Hindu males, 14 Mohamedan males, 15 European males, 2 other caste males and one European female. Of the 2 umbilical, one was an European female of 40 and the other a Hindu male of 30. The femoral hernia was in a young European male. As regards occupation, 7 were students, 8 cultivators, 4 clerks, 4 shop-keepers, 6 coolies, 7 domestic servants, 9 mechanics, 2 sailors, one doctor one sepoy and one policeman. Two were children and one a female.

The ages were as follows—

Below 10 years	2 cases
Above 10 below 20	4 "
" 20 " 30	14 "
" 30 " 40	18 "
" 40 " 50	12 "
" 50 " 60	5 "

Of the inguinal hernias, 38 were on the right side, 8 on the left and 6 double. Of these 52, 5 were bubonocoeles, 5 direct complete and 42 oblique complete. Of the 5 direct ones 2 were irreducible. Of the 42 oblique ones, 5 were congenital, and 4 recurrent after operation for radical cure, 6 months, 1½ years, 3 years, and 4 years previously respectively. Three cases had hernias of the opposite side operated on 1, 2 and 3 years before, respectively. Two had hydroceles of the same side operated on 1½ years and 5 years previously before the hernia appeared. The duration of these hernias averaged 5 years—the longest 20 years and shortest 4 months.

As regards onset only 7 could give a definite history of exertion or straining which started the hernia. Nine gave a history of an orchitis of the same side, which ushered in the hernia. The orchitis remained for 4 or 5 days with some fever, and when it disappeared the patient noticed a hernia appear. In 4 cases the history was that the patient felt a fulness and heaviness about the external ring with a dull pain down the cord for some time previous to the appearance

of hernia. The rest of the cases could not give any definite account of the onset.

Six cases were middle aged men, of not particularly active habits, with weak pendulous abdomen and a considerable deposit of fat on the abdominal walls. The abdominal muscles were lax and toneless. They developed hernia quite late in life and had very large rings. None of them had any history of exertion or straining.

Of the inguinal hernias, 11 cases had hydrocele of the same side, 2 double hydrocele and one a hydrocele of the opposite side. Two had varicocele of the same side, one had lymphangitis of cord of the same side and one had a phimosis. In one case there was a complete hernia of the left side with an undescended testis on the same side. The hernia was congenital.

JOINTS

Seventeen cases were treated for affection of joints of which 15 were males, one female and one female child. Of these, 10 were elbow joints, 5 knee joints one wrist joint and one hip joint.

Elbow joint—Of the 10 cases 9 were males and one female. Four of these were under 10 years of age. Nine cases were affections due to injury and one case an ankylosis from gonorrhoeal arthritis. Of the injuries all of them were falls, 5 directly on the elbows, and 4 on the palm of the hand. Of the latter 3 cases were backward dislocation of both radius and ulna of left side and one a fracture of the head of the right radius. The backward dislocations were all in a semiplexed and semipronated position, the range of movement of the elbow being very limited. The different bony points about the elbow were not thickened. In all the 3 cases the joint was excised by the posterior incision, and it was found that the lower end of the humerus was lying in the depression below the coronoid process which was broken off in every case. The radio-ulnar articulation was not injured, but the head of the radius was lying posterior to the capitulum of the lower articular surface of the humerus. In all the cases the articular surfaces were covered with soft fibrous material. The injuries having been over 1½ months and less than 2½ months old. The fourth was a Hindu boy aged 10 years, the exact nature of his fall could not be ascertained, all he said was that he fell from a tree and landed on his side, the right, the palm striking the earth. His was a fracture of the upper end of the right radius just below the neck. The fracture had united with the articular surface away from the joint. There was limited flexion up to a little beyond right angle and full extension could not be made. Pronation and supination was very limited. In his case the head of the radius was excised.

* Cases from the Surgical wards under the care of Lt. Col. R. Bird, M.D., F.R.C.S., M.O., C.I.E., I.M.S., and Major C.R. Stevens, M.D., F.R.C.S., I.M.S.

Five cases were fractures of the lower end of humerus leading into the joint. Two were epiphyseal separations, one a fracture of the internal condyle, and the other a fracture of the lower end with a T-shaped fracture into the joint. Four were left-sided and one right-sided. The history in all cases was a fall on the elbow direct. In all the cases the joint was very much thickened and distorted. The range of movement extremely limited in all directions. The position was mainly semiflexed and semipronated. The normal bony points about the joint were ill-defined. The date of the injury in all the cases was over one month and under 3 months.

The last case was an ankylosis of the right elbow due to gonorrhoeal arthritis, 1½ years ago. The forearm was at right angles to the arm, and there was complete pronation. There was absolutely no movement in the joint.

In all the cases the joint was absolutely quiet. Excision was performed in all the cases. In the fracture cases, a good deal of callus was found in and about the joint interfering with the movement, in one case the inner condyle was displaced forwards and a little upwards and united to the humerus in that position. In all cases except one, the posterior incision was made, and in the exception an outer incision. In all cases the lower end of humerus and the upper ends of ulna and radius were removed, except in one case in which the head of the radius was left. In one case a piece of tin foil was left intervening between the cut bony surfaces, this ended very unsatisfactorily and the case eventually resulted in death after several secondary operations having been performed.

In closing up, the muscles were always stitched separately either with silk or catgut, and a drain left in for the first 48 hours. The arm was put in a right angled splint with the forearm supinated.

The stitches were removed on the 8th day, and on the 10th day passive movements was begun. All the cases gave satisfactory results, except the one in which a piece of tin foil was left in. The ultimate results as regards movement were better than the movements had been before the operation.

The stay in hospital after operation averaged 38 days. The shortest being 21 days and the longest 77 days.

In all these cases the diagnosis was made after examination of joints under X-rays, this being a routine method followed either at the time of admission or immediately after.

Knee joints—One was a septic arthritis of the right knee joint in an old man of 54, which was opened and drained on either side and which ended fatally a couple of days after.

The second case was a penetrating lacerated wound of the left knee in a young man of 18,

result of a carriage accident. The parts were cleaned, the wound into the joint enlarged and irrigated with iodine lotion and drained. The tube was removed in a week and the wound healed up and the patient was discharged in 22 days.

The other 3 were tubercular affections of the knee joint, two left, one right.

The first, a middle-aged Hindu male, had a fractured patella wrenched one year previously. The joint never became useful, and he getting pain in it always. On admission it was swollen, of a fusiform shape and had a boggy feel. Under X-rays the joint was somewhat hazy and two wires could be seen round the patella. On opening the joint the bones were found unaffected but the synovial fringes were thick, oedematous and inflamed. They were all cut and scraped away and the wires were removed. The joint did well subsequently and the patient was discharged in 23 days after operation.

The other 2 were a boy of 15 and a female child of 3. They both had history of having sprained the knee, the boy twice in one year and the child once 2 months previously. In the boy the knee joint was excised and the cut bony surfaces were pegged together with 2 bone knitting needles. The limb was put up in plaster directly after. The stitches were removed on the 10th day and the limb again put up in plaster. He was discharged in 44 days after operation. The female child was similarly treated, except for the bone needles and was discharged in 68 days.

The hip case was an old dorsal dislocation of the right hip of nearly a year's standing in a boy of about 18, the thigh was flexed, adducted and rotated inwards. There was a shortening of 3½" and the movements were almost absent in all directions. The head of the femur was excised with nearly ¼ of the neck by a posterior curved incision, and the leg was put up in a long splint and extension. The wound healed up primarily and the extension was kept up for 6 weeks. The result was a straight limb with a shortening of about 2".

The last case was a tubercular wrist, with ulcer and burrowing sinuses. It was freely laid open and all carious material scraped away. The joint was progressing well, but had not healed when the patient took his discharge.

PROSTATECTIONS

Three cases were operated on, of which there were two Hindu males and one Mohamedan male. Their ages were 70, 60 and 65 respectively.

In all the cases there was difficulty of micturition and residual urine, the hypertrophied prostate could be felt per rectum.

Four, five and six days' preparation in hospital was given in the three cases before operation was undertaken.

All the cases were done suprapubically, the patient being placed in Trendelenburg position. The bladder was opened as usual and the hypertrophied gland was enucleated with the fingers with aid of bent scissors. In one case the enlargement was chiefly in the right lobe and in the other two of the middle lobe. The largest was about the size of a goose's egg. Bleeding was checked with hot saline irrigation of the bladder. The wound was partially closed and a large drainage tube left in the bladder to be drained into a bottle by a long tube.

All the patients stood the operation well. The chief difficulty in the after-treatment was to keep the patients dry. All sorts of devices were used such as Colt's apparatus, draining the bladder both suprapubically and through a catheter, etc. The dressings had to be changed frequently. The patients were kept propped up as much as possible.

There were two deaths, one died on the 12th day after operation and the other a little over 2 months after operation. Both had hypostatic pneumonia.

The third case which was cured was discharged from hospital 3 months after his operation. He was still leaking from the suprapubic wound, but was passing the larger quantity of urine per urethra.

ACUTE SEPTIC PHLEBITIS OF SPERMATIC CORD

Four cases were treated of which three were Hindu males and the fourth a West Indian male. Two were injection of both sides and two of the left side. Two were of five days' duration, one six days' and the fourth, not known.

The condition on admission was in all cases acute. The cord or cords were inflamed, thickened, and brown. The testicle of the side was enlarged, painful and hard, in one case fluctuating. In one case deep fluctuation was obtained over the cord in the inguinal region. The temperature varied between 101° and 104°. Tongue was dry and coated, and except in one case in which it was moist. Pulse quick and soft.

In all cases free incision was the treatment adopted. Except in one in which the cord was excised. In one case the incision was carried down to the middle of the cord when only a drop or two of the pus was met with. In another case both sides were full of pus including the tunica vaginalis.

No focus from which infection could be carried was discovered in any of the cases. In one case the pus did not grow any culture in an Agar tube.

There were two deaths. One died 20 hours after operation and the other on the 3rd day. In both the cases the temperature continued to run high and the patients never rallied. One was a left-sided and the other a double-sided one.

The other two cases began to improve immediately after operation. The fever went down the day after the operation and the wound cleaned up quickly. One was discharged on the 25th day and the other on the 29th day after operation.

HYDROCELE

One hundred and three cases of hydroceles were treated in the surgical wards. Of these, 72 were Hindus, 5 Mohamedans, 18 Europeans and Eurasians, 6 Indian Christians, and 2 other castes. Their ages varied from 18 to 59 years. The duration of the disease varied from a few months to 30 years. The average age of onset of the disease was worked out at 19 5/8 years.

Of these 103 cases, 45 were double, 34 left, 21 right and 3 abdominal. Of the 45 double ones 20 gave history of the left having started first. Of the 21 right-sided ones 6 cases had been operated on previously for the left side, and of the 34 left-sided cases 2 gave history of having been operated on for the right side before. Of the 45 double-sided, 2 had been operated on before, one on the left and one on the right side and both of these had recurrences.

Of the 103, 10 only gave history of a definite injury previous to the onset, 34 gave a history of a previous orchitis or epididymitis and 13 cases, history of regular periodical attacks of inflammation with constitutional disturbances, as fever, vomiting, etc. which lasted for 3 and 4 days. In 12 cases the scrotum was distinctly thickened, and 3 cases had warts on the surface. Forty-five cases had been previously tapped and 1 case had been tapped and injected unsuccessfully.

Seven cases had inguinal hernia in association with hydrocele. Of these, 6 were right-sided hydrocele and hernia and one was left hernia with a double hydrocele. 4 cases had varicocele on the same side as the hydrocele—left side, 3 cases had associated lymphangiectasis and two a chylocele one side, all these were double-sided ones.

Of the 45 double-sided ones, 15 were of equal and uniform proportions, in 22 the left side was larger, in 8 the right side was larger. In 10 cases the penis was completely embedded in the scrotum.

Of the three abdominal hydroceles, two were right-sided and the third left-sided. All the three were of large proportions.

In addition to the 103 cases there was treated a case of acute hydrocele of a right undescended testis.

Of these 103 cases, 99 were operated on and 4 took then discharge without undergoing any operation. Of these 99 cases, in 63 eversion of the sac was performed, in 32 the sac was partially excised, 1 was castrated and in 3 cases the hydrocele was tapped and sterile catgut was introduced into the sac. In 17 cases the scrotum

was excised on account of either its being thickened or its being of large proportions. In 13 cases the testis was noticed to be anterior to the hydrocele sac.

The largest quantity of hydrocele fluid evacuated was 44 ozs. The colour in the majority of cases was a pale yellow. In some cases it was greenish, and in such cases abundance of cholesterol crystals were noticed floating in the fluid. In one case a rounded fibrous nodule size of a small pea, was found free in the sac.

The sac varied from a thin pearly white membrane to a dense thick almost cartilaginous tissue, with patches of inflammation in between. The digital fossa was found to be broader and shallower in old cases and in a few cases almost obliterated by adhesion. In several cases the sac was distorted by dense adhesions forming pockets extending to all sides.

In a few cases incision was carried in the middle line of the scrotum, and the two hydroceles were treated through this single opening. But in the larger number of cases the two testes in double hydroceles were exposed by two lateral incisions.

Except in one case of hæmorrhage under the flaps after excision of scrotum and a few cases of stitch trouble, all the cases healed by primary intention. The stitches were removed on the 7th or 8th day and the patient discharged two or three days later. In cases where the associated hernia was treated at the same time with hydrocele, the stay in hospital extended to 3 weeks or more.

The average stay in hospital was 10 days, the shortest 7 days, and the longest 28 days.

The three cases that were tapped and had catgut inserted into the sac were not satisfactory. They complained of pain for some time, the temperature rose to 102—103 for several days in one case, and the testicle remained enlarged and painful for some time, though it was solid and no accumulation of fluid could be detected.

There were no deaths.

APPENDICES

Of thirty-eight cases treated in the surgical wards there was only one death. Of these, 17 subsided under treatment and 21 underwent operation.

There were 11 Hindu males, 5 Mohamedan males, 11 European males, 10 European females and one Indian Christian male, the only fatal case.

The ages were as follows —

Below 15 years there was only one case			
Between 15 & 20 there were 8 cases			
"	20 & 30	"	15 "
"	30 & 40	"	9 "
"	40 & 50	"	1 case
"	50 & 60	"	3 cases
Above	60	,, was only one case	

Of previous attacks the figures are as follows —

1	attack	there	were	20	cases
2	attacks	"	"	9	"
3	"	"	"	3	"
4	"	"	"	4	"
6	"	"	was	1	case
8	"	"	"	1	"

Thirty-two cases gave history of habitual constipation, 4 cases gave history of immediately previous, and accompanying diarrhoea and 2 of dysentery immediately preceding the attack. In nine cases there was definite history of vomiting during the attack.

In 13 cases there was definite colic, which began all over the abdomen starting round the navel and ultimately confined to the appendicular region. Every case of the 38 had pain and tenderness over the appendix. Thirty-six cases had a definite mass in the region varying from the size of a thickened appendix to a large diffuse swelling. In six cases distinct fluctuation observed. Twenty-eight cases had marked segmental rigidity of the muscles. All the thirty-eight cases resisted palpation. In four cases the mass was more anterior than usual, lying first external to the border of the right rectus abdominis. Six cases came into hospital during the quiescent stage for removal of the appendix.

There was no fever in eight cases including the six who came in during the quiescent stage. Thirty cases had fever, the highest temperature ranging from 99.5°F to 104°F. High temperature cases varied 2° degrees on an average during 42 hours until subsidence or opening of abscess.

The pulse, in cases which subsided, averaged 102 per minute, the highest was 108 and the lowest 88 per minute. In cases which proceeded on to suppuration it averaged 112 per minute, the highest being 130 and the lowest 100 per minute. The pulse rate dropped down simultaneously with subsidence of fever.

Two cases had definite rigors while in hospital and both these had abscesses.

In one case there was a history of typhoid fever previously. He was an officer in a British regiment and had been through the siege of Ladysmith where he had an attack of enteric. Since then he has been having attacks of appendicular colic. His attack subsided under treatment in this hospital and he went to England where he had his appendix removed.

Six blood counts were made. The leucocytes averaged 17,000, the lowest was 15,000 and the highest 20,000. All the six were operated on and only the two 20,000 cases showed no pus, the rest had abscess.

Of the 21 cases operated on, 9 cases were done for the removal of the appendix of which six were operated on during the quiescent stage. The incision for these cases was the usual lateral oblique

averaging 4" in length, the muscles were separated along the course of their fibres. In three cases there were no adhesions, though one gave a history of six attacks. The appendix in these cases was absolutely normal. In six cases there were adhesions varying from thin membranous for small area to dense firm matting for the whole length of the appendix. In one case the appendix was 7" long and was bound down to the outer lower and inner aspect of the cæcum, there was no mesoappendix and it had to be carefully dissected off the walls of the cæcum. In two cases the appendix were doubled in itself and formed a V on the outer surface of the cæcum.

In one case the appendix was only $\frac{1}{2}$ of an inch long and its base was one mass of adhesions. This man had only 3 attacks previously.

Four cases were operated on in which abscess was found and the appendix was removed. One case, a European, had four attacks previously. He had an abscess during his fourth attack which was opened and drained. Two months after the healing of his wound he had another attack in which an abscess formed. It was opened and the appendix was found just protruding from a mass of adhesions. It was traced and found to be five inches in length. It was removed and the abscess cavity drained. In one case there was only one dram of pus within a densely adherent mass. All these four cases made an uninterrupted recovery. Two of these cases were taken in an apparently quiescent stage.

Six cases were operated on for abscess only. There was one death. The duration of these abscesses varied from 10 days to 3 weeks. The fatal case died on the 10th day after operation. He was an old man of 60 who had come down from Bankipur with an abscess of 3 weeks' duration. His condition was very low and the abscess contained about 12 ozs of stinking pus. Another case an East Indian male came with a 6 days' history. This was his first attack. His condition was very grave from the first. He had a temperature ranging between 101° and 103°F with a steady pulse rate of 120 per minute. The appendicular region was one mass of resistant swelling. His tongue was dry, coated thickly in the middle and he had a marked pinched expression. The abscess was opened and found to contain about 8 ozs of stinking pus with a great deal of gangrenous looking slough surrounding it. The wound was packed with gauze soaked in Hydrogen peroxide and he was put to bed, his condition did not improve for two days and he was given a small dose of Castor oil which cleared his bowels thoroughly. On the 3rd night he had a hæmorrhage from the wound which soaked through all his dressings and he very nearly collapsed. In the morning he was distinctly better. The next night he had another hæmorrhage which was not so profuse as the first one and in the

morning his condition had improved markedly. Since then he made an uninterrupted recovery.

In 2 cases the abdomen was opened and the appendix could not be isolated, there being many adhesions all round.

Of the 17 cases that subsided without any operation, the usual treatment had been warm compresses and a daily enema. Later on the bowels were moved with salines. The average stay of these cases, in hospital, was 11 days, the highest being 30 and the lowest 3 days. The stay of the simple appendectomy cases averaged 17 days, the highest was 30 and lowest 15 days. Of the cases which had abscesses and had also the appendix removed, the stay averaged 60, the highest being 80 and the lowest 17 days. The abscess cases averaged 64 days, the highest 75 lowest 60, the last had one death.

One of the abscess cases was opened and drained as usual, but his condition did not improve as was expected. On the 7th day after the first operation, he was operated on again and an abscess was found in the right subphrenic space. He made a good recovery afterwards.

LIVER ABSCESS

Of 47 consecutive cases of liver abscess treated in the surgical wards, there were 15 deaths the mortality thus being 32 12%.

Of these, 34 were Hindu males, among whom there were 11 deaths.

Of these, 8 were Mohamedan males, among whom there were 3 deaths.

Of these, 3 were European males among whom there was one death. Two were discharged as "Relieved."

Of these, one was Indian Christian male who recovered.

Of these, one was Hindu female who recovered.

The ages were as follows —

Between 20 and 30 there were 21 cases, of which 4 died.

Between 30 and 40 there were 15 cases, of which 5 died.

Between 40 and 50 there were 7 cases, of which 4 died.

Between 50 and 60 there were 4 cases, of which 2 died.

In 20 cases there was definite history of alcohol habit.

In 9 cases there was definite history of dysentery.

In 15 cases there was definite history of both.

In only one case there was history of only malarial fever.

In 17 cases there was history of malaria associated with either dysentery or alcohol habit.

In 33 cases there was observed fever prior to operation, and in 14 there was none observed in hospital. The fever was of a hectic type. The highest reached was 103° and the variation from 2 degrees to 5 degrees. The fall in the temperature was always in the morning. The apyretic cases always had subnormal temperature sometimes rising a point or two above normal.

In 8 cases there was pain referred to right shoulder. In 7 cases there was no pain at all. In 40 cases there was definite pain in the hepatic region, getting worse during inspiration and movement. In 9 cases there was jaundice.

X-Ray examination was made in 11 cases. Of these 6 cases gave a denser shadow than the surrounding liver tissue. In 5 there was fixation of the right diaphragm which appeared to be flattened and the dome had a broader curve than usual. In all the cases there was marked limitation of the movement of right diaphragm. In two cases no shadow or flattening of diaphragm was made out, but there was an abscess.

In one case the X-Rays found a shadow, but no pus was struck, this was in the medical wards in a patient who was coughing up pus, but on exploring the cavity of the abscess was not found.

In 24 cases there was distinct bulging, laterally of the right lower ribs. In 15 cases there were distinct anterior bulging. The liver was uniformly enlarged in 8 cases. Of the lateral bulgings there were 11 deaths. Of the anterior there were 3 deaths and of the uniformly enlarged livers there was one death. There were oedema of skin in 24 cases.

In ten cases blood count was taken. The white cells averaged 16,874. The highest was 40,000 in one case. The increase was chiefly in the polymorphonucleus. The red cells averaged 3,679,145. The lowest was 2,125,000.

In 12 cases abscess was opened at once by performing hepatotomy. Of these there were 4 deaths. 23 cases were simply aspirated and there were 4 deaths, of these 14 cases were aspirated and had quinine solution injected, there were 3 deaths. 9 cases required hepatotomy and drainage subsequent to aspiration and there were 6 deaths.

Of the aspiration cases 14 were aspirated once—2 deaths.

Of the aspiration cases 7 were aspirated twice with deaths.

Of the aspiration cases 1 was aspirated 3 times.

Of the aspiration cases 1 was aspirated 4 times.

One case was aspirated 3 times and drained afterwards, another case was aspirated 4 times and drained afterwards. Both recovered.

Of the aspiration and quinine injection cases, several required aspiration and quinine injection more than once. The quinine used was the bihydrochloride salt and the solution was of 5 grs to the ounce strength. The largest quantity injected at one time was 20 grs. Two cases were injected three times, one recovered and one had to be drained. The largest quantity injected altogether was 60 grs in three injections.

Three cases were drained with a long tube into a bottle. This procedure required the dressings

to be changed once a day and the patients were comparatively more comfortable. But the long tubes required clearing out several times during the day as the pus formed a coagulum inside the tube. Of these three cases there were two deaths.

The largest quantity of pus evacuated at this first operation was 80 ozs and the smallest $1\frac{1}{2}$ oz. The nature of the pus varied from deep chocolate colour to dirty yellowish green. In consistency the pus varied from thick viscid to thin gruel-like. In almost all cases there was a characteristic fishy smell, in standing in a bottle or receiver the pus coagulated into a jelly-like mass in a few minutes. After this first aspiration, subsequent evacuation showed the pus to become much thinner and mixed with blood clots. After injections of quinine subsequent aspirations showed the pus to be very thin with shreds of thick, firm broken-down tissue.

In all the cases of first evacuation, the pus was found to be sterile, and no amœbæ were found. In one case staphylococci were found subsequently, after several dressings had been done. Scrapings from the walls of abscess cavities showed amœbæ in abundance. Of the 15 deaths, 2 cases died of pneumonia and one from hospital gangrene. The average time of death was 20 days after the operation. The lowest was one day and the highest 60 days. The usual cause of death was exhaustion. One of the fatal cases had an abscess of the liver five years previously and was cured after aspiration. The present attack began 4 months back and he was drained after resection of ribs. The first evacuation yielded 50 ozs of pus, he died of exhaustion a few days later. In one case there was considerable accumulation of fluid in the right plural cavity. This was emptied and the abscess was also aspirated. The case ended fatally.

Of the cases that were cured after operation, then stay in hospital averaged 39 days. The highest was 102 and the lowest 10, of these the average number of days for simple aspiration cases was 24, for the aspiration and quinine injection ones 31, for the ones that were drained anteriorly 30 and for the cases that were drained laterally after resection of ribs 71 days.

Of the hepatotomy cases the usual rule has been to open and drain the abscess where it bulged. Twenty-one cases were thus operated on. On 14, resection of ribs or ribs was performed. In all, except two, adhesions between the pleural layers had formed and the diaphragm had to be stitched in these two cases before the abscess was drained. Both the cases ended fatally. The rib or ribs resected were usually between the 7th and the 9th, the portion was between the two axillary lines, usually $1\frac{1}{2}$ " to 2" in length. Of the 14 resection cases 7 died. The anterior opening was usually in the mammary line, vertical and

varying from 2" to 5" in length. Of these there were 7 cases with one death. In two cases there were no adhesions and the liver had to be stitched to the parietes before the abscess was drained. Both the cases recovered. In finishing up the operation the practice has been to empty the abscess cavity as far as possible and insert and fix in position with stitches, a large-sized drainage tube and dressing with sufficient gauze. In subsequent dressings no irrigation has been used. The gauze was simply removed and replaced fresh ones after emptying the abscess cavity of any accumulation by turning over the patient and making him cough. This procedure required several dressings a day in every case except in the three mentioned before, in which the abscess was drained into a bottle with a long tube and which were dressed only once a day.

Towards the latter end of convalescence, when the abscess cavity had contracted considerably, the closure of the wound by granulation was, in a few cases, retarded by discharge of bile from the wound. These took a long time to heal and were very obstinate. Various astringents had been tried, but a solution of Tincture of iodine appeared to give the best results.

INTESTINAL OBSTRUCTION

Of seven cases treated in the wards 5 were Hindu males and 2 Hindu male children. All the seven were operated on and there were six deaths.

In every case there was tympanitis present. Vomiting in four cases, fecal in character in one case, hiccough in one case. Pain was present all over the abdomen in six cases and in one case it was confined to the lower part.

The average pulse beats was 118, the highest being 140 and the lowest 108. The average number of respirations was 29 the highest 38 and lowest 22.

In every case there was absolute constipation averaging 3½ days' duration, the longest period being six days and the shortest two days.

In four cases was enema given previous to operation and no result was obtained.

In all cases the abdomen was opened in the middle line and the following conditions were discovered.

In two cases there was volvulus round Meckel's diverticulum.

In two cases there were adhesions between two loops of small intestine and the omentum. One of these cases had a history of a blow in the abdomen a week previously. In both the cases there was a small rupture present in between the adhesions.

This was a case of volvulus of the sigmoid.

Another was an obstruction due to cancer of the sigmoid. This case had a history of

gradually increasing constipation for several weeks which had become worst during the last week and absolute for last two days.

There was a case of parietic obstruction in a little child of 1½ years. The abdomen shewed no seat of obstruction and was closed. Subsequently the child recovered and passed motions freely.

In the cancer of sigmoid case an inguinal colotomy was performed. Death occurred 10 hours after operation.

In the two cases in which there was volvulus round Meckel's diverticulum, the volvulus was untwisted after breaking adhesions and in the case of perforation, it was repaired. Death in 8 and 36 hours respectively.

In the two obstruction by adhesion cases, one was drained by a Paul's tube after enterotomy and the abdominal cavity was drained by a Keith's tube, death occurred in 15 hours. In the other, resection of gut and anastomosis by Murphy's button were performed, death occurring 14 hours afterwards.

In the volvulus of sigmoid, the twist was released, but the patient succumbed 13 hours after operation.

In the case of the child with parietic obstruction of bowels, a lump like an intussusception was felt per rectum, but nothing could be discovered after the abdomen was opened. The child recovered.

Death occurred on the average 16 hours after operation. All these cases were admitted in a very low condition, the obstruction averaging 3½ days in duration. In all the cases the bowels were emptied soon after operation as a result of release of obstruction.

The temperature in every case, except one, was subnormal prior to operation and in the exception it was 100.4. Subsequent to operation the temperature rose in every case—the highest being 101°, lowest 99°.

VESICAL STONE

Out of ten cases treated seven were Hindu males, one Hindu male child and two Mohamedan male children. The average age was 26, the highest 58 and the lowest 3.

Of these one stone was removed by lateral lithotomy, one by suprapubic lithotomy, one by perineal urethrotomy, one by evacuating catheter, and six by litholapaxy.

The average weight of stone was 8½ drs. The smallest being a small one removed by the evacuating catheter, weighing 2 grs., the largest was 2½ ozs.

The case, in which suprapubic lithotomy was done, was a Mohamedan child, aged 3. In his case the stone was too large to be manipulated by a child's lithotrite. The stone was removed by suprapubic route, and the bladder was stitched up.

and a small gauze drain left under the skin and prevesical tissues. A catheter was left in the bladder. On the 31st day he started to leak from the suprapubic wound which had thus to be drained. He left hospital in 25 days with a very small leak.

In another case there were three stones impacted in the urethra, one in the membranous part, elongated and size of a date stone and two in the bulb, these last two were faceted, each about size of a peach stone, the bulb was considerably dilated to accommodate these, and there was some foul urine surrounding these. A long incision was made in the perineum and the stones were extracted with a small scoop.

Of the six cases in which litholapaxy was performed, the stones varied in size from 70 gis to $2\frac{1}{2}$ ozs. The operations were all done at one sitting under an anæsthetic. In all cases the bladder was washed out and made to hold some sterile water—usually 3—4 ozs. The lithotrite was used several times and the bladder evacuated repeatedly till no more debris could be felt. No astringents were used subsequently for the bladder. As a rule the urine for a day or two was tinged with blood, and in some cases some blood clots and fine debris were passed, but in 3 or 4 days time the urine had become quite clear. The patients are given plenty of barley water to drink. In no case has any complication arisen.

The average stay in hospital for litholapaxy cases has been 9 days. The longest 20 days and the shortest 4 days. The one that remained for 20 days complained of continued pain for several days, but his urine was quite normal in 4 days' time.

The lateral lithotomy case remained in hospital for three weeks.

Three cases of stone were sent for chemical examination, and all the three were composed of Calcium Oxalates and Cerates.

KIDNEY

Out of six cases treated for affections of Kidney, there were two European males, 1 Hindu male, 2 Hindu females, and 1 Mohamedan male child. Their ages varied from 7 years to 48 years. The average being 30 years.

Of these one was a case of pyonephrosis, a Mohamedan male child, who had a vesical stone removed through the perineal route some time previously and another stone similarly removed a few weeks before. He developed an abscess in the kidney which was opened and drained and was discharged from hospital in 14 weeks. One was a case of hydronephrosis in a young married Hindu female, she had several children and after the birth of the last one she noticed a lump in the right side, painful and tender. It was of oval shape, not moveable but had a distinct cystic feel. She had not noticed any difference

in the quantity of her urine. On exposing through the lumbar region the right kidney was found to be hydronephrotic. It was opened and nearly a pint of clear urine emptied. It was drained with a tube. The next day she passed a fair quantity of bloody urine through the bladder and also from the wound. In three days the urine had become clear, but she continued to pass fairly large quantity of urine through the wound. Her pain had disappeared and the mass in the right loin was very much smaller. She is still in hospital. Another was a floating right kidney in a Hindu female, aged 40. The kidney was decapsuled and a collection of about 3 ozs of clear urine aspirated with a serum syringe. The capsule was fixed round to the muscles and the wound was closed. She had no more trouble and was discharged from hospital in 4 weeks.

Three cases gave a history of renal colic, one of 3 years, one of 2 years and one of eight months' standing. Two of these had passed gravel with urine, one case twice. Two of these were European males and one a Hindu male. In all the three the right kidney was explored and in one, a European male with history of having twice passed gravel, scale-like gravel was found. In the other two no stone could be discovered.

All the six cases were right-sided and in all cases the kidney was approached by the oblique lumbar incision, the patient lying on the opposite side with a pillow under the loin. In all the cases the kidney was easily found under the perinephritic fat and after separating it from surrounding tissues delivered out of the wound. In all, except the aspiration case, the kidney was entered into through the dorsum and when closing up, silk sutures were used passing deeply through the substance except in the hydro- and pyonephrosis cases which were drained. In the four cases in which the kidney was sutured, a temporary drain was inserted into the surrounding perinephritic tissues and removed a day or two later. In one case there was deep stitch trouble but otherwise all the four healed up easily.

There was X-ray examination made in 3 cases and nothing definite could be discovered.

The average stay in hospital has been six weeks, the longest more than 4 months, the hydronephrosis which is still in hospital, and the shortest 1 month in the floating kidney.

There were no deaths.

GALL BLADDER

Out of ten cases treated for affection of Gall bladder, 3 were Hindu males, 3 Hindu females, 1 Mohamedan male, 1 European male and 2 European females. The average age was 31, the highest being 49, the lowest 19.

Of these ten cases 2 were treated for biliary colic and went away relieved without any operation. The remaining eight were operated on.

Eight cases gave a history of definite colic, two cases of more than one attack. Jaundice was noticed in 7 cases. The liver was enlarged in 5 cases. There was a mass felt in the region of the gall bladder in 7 cases. In one case it was of a pyriform shape, extending down for four inches below the costal arch. The mass was hard and nodular in another case. Definite tenderness over the gall bladder was present in 8 cases. In one case pain was referred to the right shoulder. Fever was noticed in hospital in 6 cases. The maximum was 103°F . In 6 cases there was history of habitual constipation, in one case a history of diarrhoea and in one dysentery immediately associated with present attack.

X-Ray examination was done in 3 cases. In two the shadow was continuous with that of the liver and in the third it was independent of it. One of the continuous shadow cases turned out to be suppurating cholangitis and the independent shadow case had a small stone in the gall bladder.

Blood count was taken in 5 cases. The average number of leucocytes was 8,557, the highest was 13,125, the lowest 5,312. More of these cases had only a stone in the gall bladder and the fourth was a case of suppurating cholangitis with the white cells numbering 7,250. In one of the non-operative cases the leucocytes were 13,125.

The cases that were not operated on were treated with low liquid diet and salines. In both of them the gall bladder could be felt and it was tender. In one case there was a history of a drinking bout and in the other a strain in lifting some heavy object. The liver was enlarged in both cases and in both there was slight jaundice. One was discharged in 16 days and the other in 13 days.

In one case of septic cholangitis cholesterol crystals were identified in the stools.

Of the eight cases that were operated on there were 3 deaths. Two were cases of septic cholangitis and the third a case of stone. One of the cholangitis cases died 20 hours after operation, the second in 15 days and the stone case in 3 weeks.

In 5 cases were stone found in the gall bladder and all of them single in each case. Two were elongated opaque of the size and shape of a nutmeg and with soft crust coating the surface. One was rounded, opaque and soft, size of a marble. One was a translucent, rounded and somewhat flattened about the size of a plum stone and another similar to the last but more spherical and smaller. In one case the gall bladder was full of thick transparent mucus with the stone occupying the opening of the cystic duct. In another the stone was surrounded by a turbid pus-like material. The rest of the cases had bile in the gall bladder. In one case the walls of the gall bladder were nearly $\frac{1}{2}$ " thick.

In three cases there was found only septic cholangitis. One recovered, and two died. In all these cases there was high fever and general malaise.

In all the cases except one the gall bladder was drained. The peritoneum had to be shut off with packing during the operation and afterwards stitched to the margins of the opening in the gall bladder. In two cases the drain was by means of a long tube into a bottle, through the dressings. In only one case the gall bladder was stitched up and the abdominal wound closed.

In no case were adhesions found between the gall bladder and the parietal peritoneum. In four cases were some adhesions found between the omentum and gall bladder and in one of these was the transverse mesocolon adherent.

Of the cases that were cured, the one in which the gall bladder was stitched up was discharged in 3 weeks. The remaining four stayed in hospital for 7 weeks on an average the highest being 12 weeks for the septic cholangitis case the lowest 4 for a stone case.

ABDOMINAL TUMOURS

Out of five cases operated on 2 were Hindu males, 2 Mohamedan males, and an European male. Ages varied between 16 and 50. Four cases were malignant tumours and the fifth a pancreatic cyst.

Of the malignant tumours, two were retroperitoneal sarcomas on the left side. One, a European male, aged 33, had a history of having received an injury to his left testicle which became sarcomatous and was castrated about a year before. Some months afterwards he noticed a lump growing in the left lumbar region which became painful as it grew bigger. On opening the abdomen the tumour was found to be occupying the retroperitoneal space in the left lumbar region. It was immovable and intimately adherent to the surrounding structures. The abdomen was closed and the abdominal wound healed up in a week. The other was a similar case in a Mohamedan male with a history of four months. There was a hard rounded tumour near to the left of the umbilicus, tender and painful, with a communicating pulsation from the large vessels. On exploring, it was found to be a retroperitoneal growth adherent to the vessels and the structures all round. The abdomen was closed as usual.

The third was a Hindu male, aged about 35, with a history of 6 months' pain, vomiting and pain in the epigastrium. The patient was very much emaciated and there was ascites. A distinct hard nodular mass was felt in the epigastrium. The abdomen contained a large quantity of sanious fluid, the omentum was thick nodular and hard, it was adherent to the stomach and the transverse colon, forming

a large mass The abdomen had to be closed without anything being done

The fourth was a lobulated hard tumour in the hypogastrium more to the left side It began as a small tumour in the left inguinal region and in four months became as large as a small coconut The left testicle was undescended On opening the abdomen the tumour was found to be a growth, most probably a sarcoma of the left undescended testicle It was intimately adherent to the bladder and the left pelvic wall There were large vessels growing on its surface, and it could only be lifted with the bladder into the wound The abdomen was closed without anything being done to the tumour

All these four cases were inoperable and the patients were discharged as soon as the laparotomy had healed One of the cases, the European male, with a retroperitoneal sarcoma has since died

The fifth case was a Hindu male, aged 16 He related that 8 years ago he felt a lump in the abdomen which increased for a time and then decreased somewhat at times This latter effect was marked with the action of purgatives The last 3 years it has been growing steadily On examination a large cystic tumour about the size of a football, was found occupying epigastric, right hypochondriac, umbilical and the right lumbar regions It could be moved from side to side, but not above downwards, nor did it move with respiration X-Rays showed a shadow, in the abovementioned regions, which was quite separate from the liver His urine gave a negative result to cambridge reaction, but contained some crystals of oxalates and some hyaline tube casts On opening the abdomen the cyst wall presented the anterior surface of which was free from adhesions It was emptied of 6½ pints of dark coffee-coloured fluid which gave reaction of all the three pancreatic enzymes Posteriorly its cyst was adherent to the posterior parietes by a broad base and could not be dissected away It was drained by a long tube into a bottle through the wound Some time after the drained fluid gave negative results when examined for the pancreatic enzymes The patient is still in hospital and his discharge has practically ceased

ACUTE PANCREATITIS

Three cases were treated, of whom one was a Hindu male, one a Mohamedan male, and the third a European male, of ages 29, 35 and 27 respectively

The first was a European male, aged 27, constipated for 2 days, was seized with pain in the abdomen He was passing scanty urine these 2 days On admission, the abdomen was not much distended nor was it markedly rigid, there was no vomiting, and pain was not

confined to any definite area, the pulse was 130, respiration 30, and the temperature 97° He looked anxious and very ill A diagnosis of obstruction was made On opening the abdomen intestinal in the middle line above the umbilicus, the omentum in front looked dark greenish, tracing this down to the right side and posteriorly, the pancreas was found to be sloughing, the wall of the duodenum next to it necrosed the small intestines below duodenum were collapsed, a counter-opening was made in the right flank and a drainage tube inserted Another gauze drape was inserted through the abdominal wound The patient died 8 hours after operation

The second case, a Mohamedan male, aged 35, was seized with pain 2 days ago No further facts were elicited as the patient was very ill On admission he complained of much pain round the umbilicus, no definite tender area The abdomen was not distended, but was somewhat rigid, the rigidity of the left rectus was most marked but not boardlike There was no dullness of the flanks The facies was typically peritoneal Pulse 88 Temperature 99 Tongue was dry and furred, and there was absolute constipation but no vomiting A diagnosis of perforated gastric or duodenal ulcer was made On opening the abdomen in the middle line, a small quantity of blood-stained fluid escaped the omentum was noticed to be greenish The gastro-hepatic omentum was found to be oedematous and hæmorrhagic along the lesser curvature The pancreas was hard, swollen and dark red in colour, while this was being packed off, the patient stopped breathing and in spite of all efforts expired

The third case, a Hindu male, aged 29, was seized with sudden pain referred to the umbilicus, when straining at stool 3 days previously, he had been operated as for radical cure of hernia in the right side about 6 weeks previously the scar was a firm one, the end was somewhat thickened On admission the abdomen was somewhat distended, some dullness in the flanks, pain most acute near the right iliac region The pulse small, 120 per minute, respiration 42, temperature 98 There was no vomiting A diagnosis of intestinal obstruction by adhesions was made On opening the abdomen near the old hernial scar nothing was found and it was closed up Incision was made in the middle line and a quantity of blood-stained turbid fluid escaped, it occupied the right upper flank, the left flank and the pelvis Some adhesions were found between the omentum and the pancreas in the right iliac region Some separate points of fat necrosis were recognized in the omentum above The gastro-colic omentum was opened and the lesser sac was opened The pancreas was found to be swollen, purple-coloured, with glistening peritoneum It was packed off and incised, some hæmorrhages

and sloughs removed. A cigarette drain was placed and another into the pelvis. Saline had to be infused and patient bore the operation fairly well. He suddenly collapsed 10 hours after and died. During autopsy it was found that the abdomen contained some fluid similar to what was found during operation, there were some patches of lymph on the small intestines. Pancreas was well packed off, the whole of it except $\frac{1}{2}$ " towards the tail was swollen, hæmorrhagic and purple.

All the three cases began with a sudden seizure of pain in its abdomen, while otherwise in good health. There was not much distension of the abdomen in any of the cases. There was no vomiting. The pulse and the facies were typically peritoneal, there was no noticeable rise in temperature in any of these cases. Constipation was marked in all and there was scanty urine passed. Pain and tenderness was not confined to any definite area. All the three patients were young and middle-aged, and in all the 3 cases the condition became desperate in 2 or 3 days. The omentum necrosis and free blood-stained fluid in the abdomen were the first things noticed on opening the abdomen. The pancreas was deep purple and swollen with areas of necrosis in its substance, and in the case which lasted 3 days, the wall of the duodenum was invaded. All the 3 cases proved rapidly fatal.

PYLORIC OBSTRUCTION

Four cases were treated for pyloric obstruction, of whom 3 were Hindu males and the fourth an Indian Christian male. Their ages were 33, 31 and 45 years, respectively.

All the cases gave history of long-standing indigestion, alternate constipation and diarrhoea, vomiting some time after food and pain before vomiting, but relief after it. In one case the pain was aggravated after food, and in another pressure relieved the pain. Stomach was dilated in all the cases, and in one case there was an hour glass constriction near the pyloric end. A lump was felt in all the 4 cases in the right hypo-chondrium, disappearing and reappearing at times. In 2 cases free hydrochloric acid was present in stomach contents.

After a Bismuth meal, under X-Rays, in all the cases it was seen that most of the Bismuth remained in the stomach and in one case there was none in the pylorus. The hour glass constriction in one case was recognized.

Three cases were in fairly good health, the third was very much emaciated.

In all the 4 cases, laparotomy was done in the middle line in the epigastrium. The stomach, transverse colon and meso-colon were reflected above and an opening made in the meso-colon about the middle, the posterior wall of the stomach was

pulled through this opening near the greater curvature. The jejunum was pulled tight near the duodenum, and an anastomosis made between it and the posterior wall of the stomach after clamping the 2 with forceps. The posterior margins were stitched first, the mucous and submucous layers the next, and lastly, the anterior margins by continuous fine silk sutures. The cut margins of the meso-colon were stitched to the stomach wall. The abdomen was closed as usual after reducing the contents. No food was given by the mouth for the first 48 hours, and for the first 12 hours only warm saline per rectum. Liquid food, such as barley water and chicken jug, was given on the third day and gradually more food was given, soft rice and milk was given the 7th day after operation, the patients retaining all these feedings well. Three cases began to improve at once after feeding was begun and complained of hunger frequently. The fourth case which was emaciated very much before the operation did not improve at all and died on the 10th day after operation.

The other 3 were discharged in very much improved health on the 24th day, 29th and 33rd day after operation.

In one case, the leucocytes amounts to 11,250, the red cells 3,050,000, and hæmoglobin value amounts to 40%.

There was no vicious circle noticed in any of the cases.

FRACTURE OF PATELLA

Six cases of patellar fracture were treated, one was a European male, 2 Hindu males, one Hindu female and 2 Mohamedan males. Their ages varied between 35 and 50 years. The average being 41 years. All the cases were fractures of the left patella, and in one case there was a fracture of the left olecranon as well.

Two cases received direct injury in the patella, while four gave a history of the foot having slipped and something snapped and afterwards they found that they could not walk. All the cases were admitted the day they received injury.

In all cases the knee was considerably swollen, but a distinct gap over the patella could be made out. All the cases were put up in back splint and evaporating lotions used over the knee.

Under X-Rays all the fractures were recognized, with marked separation of fragments, and in one case the lower fragment was found to be tilted forwards.

In four cases the knee joint was aspirated prior to operation on an average 7 days after the injury and dark tarry fluid, varying from 1 to 4 ozs was withdrawn.

Operation was undertaken on an average 18 days after injury, the shortest time being 7 days and the longest being 31 days.

In four cases the incision was a transverse semilunar one, passing from one condyle to the

other over the tendon of quadriceps extension, and the flap thus formed turned downwards. In one case the flap was turned upwards the incision running over the ligamentum patellæ, while in the 6th case the incision was vertical along the middle.

In all cases the capsule was found to be considerably torn and the tags intervening between the fragments, while in every case a fair amount of blood clot was found to be occupying the sub-patellar space and the neighbourhood.

The fracture was in all cases transverse, with the lower fragment very much smaller than the upper about $\frac{1}{3}$ to $\frac{2}{3}$. In one case the lower fragment was in two pieces with a vertical fissure, while in another both the fragments were in two pieces by a median longitudinal fissure. Both these cases had a history of direct injury. In one case the lower fragment was tilted forwards, while in three cases, the lower fragment was bevelled at the expense of the anterior surface with a corresponding bevelling of the upper fragment posteriorly.

The subpatellar cushion of fatty synovial membrane was not injured.

The clots were removed in all the cases, and in one case the whole cavity was washed out with warm saline. In the others they were only sponged clean. The fracture surfaces were freshened in all cases. In each case two borings were made in each fragment and in four cases, two strands of silk-worm gut were used for each hole to bring the fragments together. In the other two cases alumino-bronze wire was used. The borings went through the substance of the patella leaving the lactologinous surface uninjured. The capsule was stitched with fine silk sutures and the skin incision closed as usual in all the cases. In four cases a silk-worm gut drain was left for the first 48 hours after which it was removed.

Four cases were dressed and then put up in a box splint with foot piece, the lower end of the limb being elevated on pillows and sand bags. The other two cases were put up in plaster of Paris at once. The plaster of Paris was removed on the 7th day when the stitches were taken out and another put on again to be removed a week later. In the other four cases, the temporary drain was removed at the end of 48 hours, the stitches removed at the end of the seventh day and the splints taken off about the fifteenth day. Of the latter all the cases did well except one which gave deep stitch trouble.

Passive movement was begun soon after the splints were taken off and massaging the knee with some stimulating liniment was done. The patient was then made to sit on the edge of the bed and dangle his leg forwards and backwards. In about a week's time he was able to walk about with the aid of a stick.

The average stay in hospital after operation was 44 days which being added to the 18 days

the patient waited for the operation makes the whole of his stay in hospital amount to 62 days. This figure is somewhat exaggerated by the fact that two cases remained an unusually long time, one case which gave stitch trouble remained in hospital for about 4 months and the other which had a simultaneous fracture of the olecranon and which was wired successfully at a subsequent date remained in hospital a little over 3 months.

NOTES ON EARLY TUBERCULAR DISEASE OF THE CÆCUM

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THERE is nothing so chastening to the self-esteem of a Surgeon engaged in abdominal work as the after-history of some of his operation cases. More especially is this so as regards hospital patients, for the most part with these cases as soon as the first few days discomfort, following the operation, is over, the convalescence is easy and quick, and at the end of a month or so the patient leaves the ward in good health, relieved of his pain and symptoms. It is not till the patient is seen again some months later, when the stress and toil of every-day life has again been encountered, that it is discovered that certain operations thought at the time to be brilliantly successful have proved to be of doubtful value or even failures, as far as the ultimate condition of the patient is concerned, and this latter point is after all the *raison d'être* of the operation. We are far from suggesting the above is the usual course with abdominal operations or that operative work of this nature should be more restricted, than is at present the tendency, but we think it is necessary for the Surgeon to consider more carefully than is, perhaps, at present the case what is the exact condition of the patient that has given rise to the pain and discomfort, to leave nothing in the technique of the operation undone, than can possibly benefit the patient hereafter, and not to be content with merely dealing with the most obviously diseased condition found, unless he is convinced that this is the one and only cause of the trouble complained of.

Of late these considerations have been forcibly impressed on the mind by the after-history of certain cases operated on for chronic appendicitis. We quote four cases which may be taken as typical of others.

No 1.—A European, male, aged 30 years, complained of chronic pain in the right iliac fossa with tenderness over McBurney's spot. He had never had an acute attack of appendicitis, but the constant pain became worse on exercise and he was unable to follow his occupation. He was invalided to England, where appendectomy was performed, but on his return to Burma a few months

later his pain had returned, and he was incapacitated from work. On this occasion the cæcum was again cut down on it was found free of all adhesions but containing an indurated ulcer, the size of an almond, which was excised. No enlarged glands were to be felt in the mesentery. The patient convalesced rapidly and being sent to a warm dry climate enjoyed good health for about 18 months. The pain then again recurred and he was once more sent to England, where, it is understood, the cæcum was excised, but his health is now poor, and he has since been pronounced unfit for further service in his firm.

No 2—Eurasian woman, aged 28 years, complained of chronic pain in the right iliac fossa, worse on exercise. She had lately had an abortion at three months, and was suffering from excessive menstruation. Examination displayed an enlarged and tender uterus, and tenderness in the right side of the pelvis without there being any obvious thickening or induration. For this she was emitted but without relief, and as the pain in the right iliac fossa was no better, two months later an exploratory laparotomy was performed and the appendix removed, though, truth to say, beyond slight thickening there was no obvious disease of this organ, the cæcum appeared normal as also did the uterus and its appendages, and there were no enlarged mesenteric glands. After the operation the temperature remained normal, the pain disappeared, and the patient left hospital apparently cured. Whilst in hospital, the patient was tested with tuberculin by the conjunctival reaction with negative results. Six months later, news has been received that the patient had developed signs of pulmonary tuberculosis, and gave a positive Von Pirquet's reaction and the pain in the right iliac fossa has returned.

No 3—A Birmann, male, aged 40 years, was admitted into hospital in December 1910 for a painful lump in the right iliac fossa, for which appendectomy was performed. No note is available as to the condition then found, but presumably removal of the appendix was all that was considered necessary. He left hospital of six weeks later greatly improved in health, but the wound was not completely healed, one month later however, he came back with a fecal fistula. Rest in bed and careful dieting was persevered in for three months but without improvement, cæcum was then excised, the operation being performed in two stages, an anastomosis of the ileum to the colon being first made and the cæcum and fistulous track being excised on a second occasion. The immediate results of the operation were satisfactory, but three months later pulmonary tuberculosis appeared which rapidly killed the patient.

Case 4—A Hindu woman, aged 24 years, was admitted with symptoms of chronic appendicitis. There was no history of any acute attack, but chronic pain and discomfort in the right iliac fossa made her seek hospital treatment.

On examination the lungs and other organs were apparently healthy, but vaginal examination disclosed some fulness and tenderness about the cæcum. Tuberculin reaction was negative and there was no cough or expectoration. The patient, however, looked thin and in poor health. On operating, the cæcum was found thickened and indurated over a patch, the size of a rupee, situated at the base of the appendix, there was also some enlarged glands about the size of almonds in the ileo-cæcal mesentery. The cæcum with about 6 inches of the ileum and 4 inches of the ascending colon was excised, and the ends of the bowel brought together by lateral anastomosis, the operation being completed at one sitting. The patient has made a good recovery from the operation, but it is too early to say what the ultimate result will be.

These first three cases illustrate how fallacious the immediate results of an operation for appendicitis may be. The operation as is usual in such cases gave rise to little disturbance, and the convalescence gave promise that a speedy and successful cure had been effected, the after-results, however, proving exactly the contrary, the real cause of the improvement being we have little doubt the rest in bed and careful and suitable dieting, as soon these measures were given up, the primary disease reasserted itself practically unchanged. To Surgeons who operate not infrequently for appendicitis, we feel sure in many cases it has happened they have cut down on appendices which they have been surprised to find to all appearance normal or so little affected as to be obviously insufficient to give rise to the symptoms complained of. It is in such cases most searching investigation should be made for signs of tuberculosis in the cæcum, the small intestine, and their mesenteries, should such conditions be found an excision of the affected gut and its mesentery should be forthwith carried out. Even with an obviously diseased appendix the Surgeon should still prosecute a careful search for enlarged glands in the mesentery and consider well the possible cause of the disease present and how far simple appendectomy will really cure the patient, for it is in tubercular affections that the one hope of a successful issue is to deal radically with the disease whilst in its earliest stages.

As regards tuberculosis of the cæcum when once a diagnosis can be made with reasonable certainty there must be no temporizing or half-hearted measures, the responsibility thrown on the Surgeon is no doubt enormously increased, but he has no more right to shrink it than he has in cases of cancer and other such deadly affections. The scope of the operation to be performed is, no doubt, completely altered, and a dangerous proceeding substituted for the comparatively harmless operation of appendectomy, but there is no middle course as far as the welfare of the patient is concerned. With these points in mind, the constitution of every patient suffering from so-called chronic appendicitis should be most carefully

examined and all available tests for tuberculosis carried out, whilst before commencing the operation the Surgeon should explain to the patient he will have to be guided by the condition found and have perhaps to perform a more serious operation than he anticipates. All necessary instruments for an excision of intestine should also be made ready so as to be at hand should they be required.

What proportion of cases diagnosed as chronic appendicitis are in reality due to tuberculosis of the cæcum, we are unable to venture an opinion, but in Rangoon where tubercular affections of the intestine are common, I think, in the past not a few cases of early tuberculosis of the cæcum have been inefficiently dealt with disastrous results to the patients following, the diagnosis of this condition, however, before opening the abdomen is a matter of great difficulty.

Whatever the nature of the infection producing chronic inflammation of the appendix, the characteristic symptoms are due to obstruction to free drainage. This obstruction may be 'catarrhal' and temporary or the result of new tissue formation and more or less permanent, like other micro-organisms the streptothrix of tubercle may produce either of these changes, first catarrhal and later permanent obstruction. Tubercular infection for some reason seems in a considerable number of cases to be limited to the region of the appendix and cæcum, and in all cases of infection starting in the appendix the wall of the cæcum has doubtless become involved before the disease has progressed sufficiently to cause local symptoms.

In the case of an inflammation the result, *e.g.*, of a sub-acute bacillus coli infection with a history possibly of several recurring characteristic attacks, removal of the appendix will give permanent relief, as obviously there will no longer be obstruction to its free drainage. In the case of tubercular infection, the wall of the cæcum being already involved, removal of the appendix may temporarily relieve the symptoms, but the extension of the disease in the wall of the cæcum will shortly lead to some such result as happened in Case 3, the formation of a fecal fistula. Hence the desirability of exact early diagnosis and immediate radical treatment.

The following points which we have noticed in the cases we have met may possibly be of some assistance in forming a diagnosis.

The onset of the pain in the right iliac fossa has been gradual and there has been, as a rule, no history of one or more acute attacks of appendicitis, the patient often being unable to tell you the exact period since the pain was first noticed. The condition of the patient is often not physically so good as is frequently met with in cases of chronic appendicitis. The lungs probably reveal no signs of tubercular infection, nor are other signs of this infection to be found elsewhere, but the general condition of the patient is poor and as such the case should

be looked on with suspicion. We would also suggest that a rectal or vaginal examination would in some cases disclose a thickened and indurated cæcum with enlarged mesenteric glands and so give a hint of the true condition present.

Evening rise of temperature might also suggest tuberculosis.

In short, we would urge cases of "Chronic Appendicitis" should be viewed with more suspicion than is at times usual, and an operation should not be commenced without the possibility of having to perform a radical excision of the gut being considered and all necessary preparations made.

As regards the technique of such an operation very full and excellent instructions have lately been published by Mr Barker (*The Lancet*, September 23rd, 1911) and by Mr W I Mayo (*Surgery of the large intestine with review of one hundred resections. Collected papers by the staff of St Mary's Hospital, Mayo Clinic*).

A perusal of these papers would show that some of the main points in the performance of excision of the cæcum for tuberculosis are —

- 1 A sufficiently large working incision
- 2 Free mobilization of the large intestine by division of the outer leaf of the mesentery so that the parts operated on may be brought outside the abdomen
- 3 Identification of and separation of the ileum from the affected gut
- 4 Large anastomotic opening, as long as the opening is large enough, the method of anastomosis is of little real importance
- 5 The desirability of completing the operation at one sitting if the condition of the patient is sufficiently good

Attention is also drawn to the fact that though the removal of enlarged glands should be as thorough as possible large tubercular glands may be left behind with ultimate successful results, as long as the supply of infection is removed.

SURGICAL CASES

By T H SIMONS,

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I—CASE OF POPLITEAL ANEURISM

Munisawmy, a sawyer, aged 40, was admitted into the Royapuram Hospital on 7th March 1912, complaining of a painful swelling at the lower end of the inner side of the left thigh.

History

Past—Definite history of syphilis ten years ago which was treated with apparently satisfactory results. Small-pox.

Family—Nil

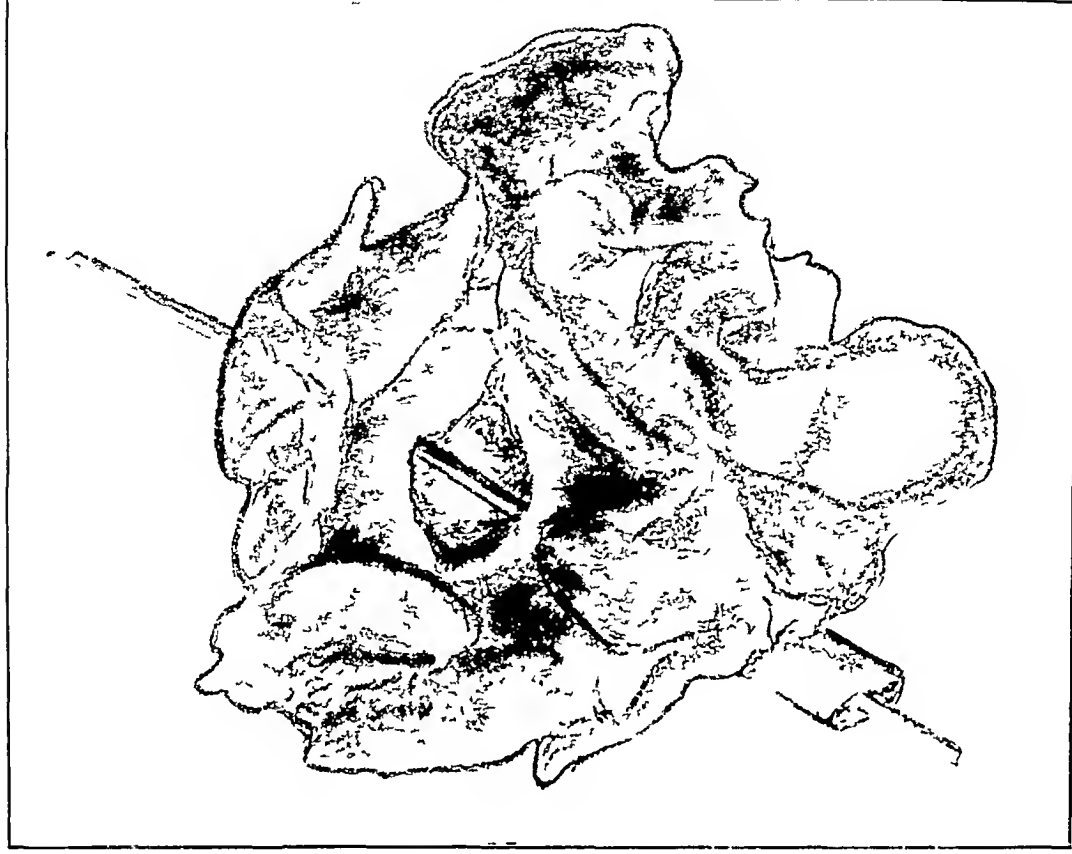
Present.—Some ten days ago the patient noticed a swelling at the lower end of the left thigh on the inner side, which he attributed to eating a

SURGICAL CASES

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EXTERNAL VIEW



INTERIOR OF THE SAC

couple of sweet potatoes. The pain was not sufficient to prevent time from finishing his day's work, nor did he desist from his work till the time of his admission into the hospital. The swelling in the interim apparently increased in size slowly and gradually.

Examination

General—The patient is a tall, "hard," fairly muscular individual. Glands palpable in the posterior cervical triangles. Epitrochlear glands are not enlarged. Apex beat is in 5th space just inside the nipple line. Heart sounds are irregular, the first being accentuated at the apex, no murmurs, no transverse increase of aortic dullness, well marked atheroma of brachial and radial arteries, tension is increased but not much.

Local—Above the inner side and behind the left knee-joint and along the line of the hamstring tendons a swelling is noticeable. It extends in length for about $2\frac{1}{2}$ " movable transversely, and to the touch gives a boggy feel resembling false fluctuation. No pulsation was detected.

Diagnosis—? Gumma in the Popliteal area.

Operation—A long incision made on the inner side of the popliteal space in the long axis of the swelling and the hamstring muscles pulled to the inner side on passing a finger into the wound, the swelling was noticed to have definite outlines, and seemed to come off from the region of posterior wall of popliteal space, whilst the margin of the swelling was being defined a faint pulsation was felt in the deep part of the swelling. Pressure on the femoral artery at Poupert's ligament caused swelling to be diminished in size, refilling immediately on pressure being removed. The aneurysm was about the size of a big hen's egg and I decided to extirpate it, the artery was cleared above the swelling and some of the fibres of the adductor magnus muscle were divided to get a safe distance away from the aneurysm, before I could ligate the artery. The artery here was tied with two silk ligatures and divided between, and the aneurysm with the artery was dissected off the structures of the popliteal space in the direction from above downwards, in doing which some difficulty was experienced with the popliteal vein which was unfortunately nicked and a lateral ligature was applied.

The artery below the aneurysm was then ligatured in two places divided between and the aneurysm removed. A large cavity was left as a result of the removal of the swelling, a drainage tube was inserted and the wound closed with a moderate amount of pressure. The lower limb from the knee downwards was wrapped in cotton-wool and covered with bandage, no pulsation in the posterior tibial palpable.

After-History—The patient experienced no pain in the limb, pulsation felt in the posterior tibial 7 days after operation. It should be

noticed that the posterior tibial of the other leg is with difficulty located. A curious condition noticed is that the patient has marked atheroma of his veins, the internal saphenous on both legs feeling more like pieces of whipcord than normal vein structure. The condition of the limb never caused any anxiety, toes are all warm and of good colour.

Sketch—The aneurysm on being opened was found to contain a very large quantity of laminated clot, the sac wall was thin in places and was actually torn in the course of dissection. I enclose two sketches of the aneurysm, one entire and the other aneurysm laid open, probe passed in the course of the artery and laminated clot spread out and stitched to the margins of the wall.

II—CASE OF HYDROCEPHALUS

M 1, set 7 months, was brought to the hospital with the complaint that it was not able to support its head in the erect posture.

Duration—4 months.

History—Labour apparently normal. Mother says that the child was quite healthy and cheerful for the first three months, the fourth month it suffered from convulsions accompanied with high fever, both of which have persisted up to the time of admission into the hospital. These convulsions are said to come on every day and last for nearly half an hour, and as many as ten have occurred in one day. The twitchings begin first in the face and then extend down to the arms and legs.

Examination The Head—Hydrocephalic.

Skin—Smooth, thin and glossy.

Hair—Scanty.

Parietal and frontal eminences are prominent.

Circumference of the head $17\frac{1}{2}$ "

The sutures are all widened especially the sagittal, coronal and parieto squamous.

The head is very heavy and the child is absolutely unable to support it. There is marked retraction of the head and rigidity of the neck muscles.

Operation—It was decided to establish subdural drainage. The day previous to the operation the head was shaved, cleansed and painted with tinct iodine and afterwards wrapped in an aseptic towel. The next morning the towel was removed and the head was repointed with tinct. iodine.

Over the margin of the broad anterior fontanelle a semi-lunar incision was made, the flap turned down and the dura mater opened up to the right of the superior longitudinal sinus. The brain was intensely congested and promptly bulged through the wound. By gentle pressure the brain was pushed away from the dura mater, inside the parietal bone, and half a dozen strands of catgut inserted in the space, extending down for about $1\frac{1}{2}$ ". An aspirating needle was then passed into the right lateral ventricle in a direction downward, forwards and inwards, and some

cerebro-spinal fluid withdrawn. The free end of the catgut was then passed, by means of a sinuss forceps, into the lateral ventricle, using the needle as a guide. A large quantity of fluid escaped and the brain receded from the wound. The dura mater was closed by means of catgut sutures and the external wound sewn up and collodion seab applied.

The patient was quiet during the day of operation, next morning temperature shot up to 103° F, and the patient had convulsions. The latter promptly yielded to a mixture of chloral and bromide per rectum. The wound healed by first intention. There was slight pyrexia for eight days after the operation, when the temperature came to normal and remained there—pyrexia probably due to irritation set up by the presence of catgut.

The child was discharged on 18th April 1911, the head much smaller and the child able to support it in upright position.

The child was brought to hospital on 1st May 1911, when the head was smaller and the child was able to move it about. Wound perfectly free and non-adherent to deep structures.

The case is an interesting one and shows that if sub-dural drainage be established, the emptying of the ventricles follows and the head tends to assume the normal condition.

In this case from the extreme distension and the consequent widening of the fontanelles, there was plenty of room to get beneath the dura mater without removing any of the bone. There was a certain amount of oozing of cerebro-spinal fluid through the wound and to prevent any contamination from outside the head was wrapped in an aseptic mackintosh.

The child was taken away by the mother and afterwards could not be traced.

VITAL STATISTICS

BY CHARLES MILNE,

MAJOR, I.M.S.,

Civil Surgeon, Mussoorie

THE importance of accurate vital statistics to a nation or a state admits of no doubt. There are few Civil Surgeons, I should think, who read a report of a Sanitary Commissioner of an Indian province for pleasure, fewer still who would read it for profit, at least as far as the statistical part is concerned. Many indeed may feel something like guilt that they have been instrumental even in a small degree in aiding the production of the report. For three months during the present winter I was stationed at Jhansi and during that period I examined the blood of all cases of fever that were admitted to the Jail Hospital, to the Police Hospital, and to the District Hospital, also I examined a great many of the out-patients at the District Hospital who complained of fever. I found malaria parasites in the blood of only a very few patients examined—further I gave no

quinine to any of the patients in these hospitals unless the parasites were observed. All the cases recovered without quinine within short periods of their admission. Now what is to be deducted from this? The reports submitted to me from the police showed that fever, presumably malaria, was responsible for many deaths in the district during that period.

These reports are sent to the Sanitary Commissioner will eventually be embodied in his report, will receive a yellow cover, and will be sent out into the world as a true statement of the diseases of the district.

I mentioned the results of my examination to an eminent sanitary expert—he discredited them altogether, doubted their reliability, and then as an afterthought, informed me that even the officer on special malaria duty had found parasites “very scarce this year.”

Now could criticism be more fatuous and futile—an ordinary person would say—“no parasites, no malaria”—not so this expert—merely a scarcity of parasites.

What then are the diseases occurring in the winter and spring months, which are lumped under the head fever in these reports? Malaria is no doubt present, as I had several cases of malaria cachexia during the three months I made my observations.

I think the following diseases are frequently returned as “Fever”—

- | | |
|--------------------------|------------------------|
| 1 Pneumonia | 4 Other fevers |
| 2 Pulmonary tuberculosis | 5 Liver abscess |
| 3 Typhoid fever | 6 Syphilis |
| | 7 Abscesses in general |
| | 8 Scanty |

1 Pneumonia is an exceedingly common cause of death in India during the winter and spring months. I have frequently found that sub-assistant surgeons and even assistant surgeons do not diagnose it in their own hospitals. Also it is a very common cause of death in those cases sent by the Police for *post-mortem* examination which have not died violent deaths. There is no European country in which accurate vital statistics are published which could be compared with India; probably the conditions in Italy more nearly approach those in India than any other country in Europe. Now pneumonia, according to Clemow, is the cause of more deaths in Italy than any other single disease or group of diseases, enteric disorders alone excepted. It is responsible for as many as 2,500 deaths per million living.

Husch quoting Sormani gives the death-rate from pneumonia at 2,800 in Turin, 2,900 in Genoa, and as much as 4,100 per million living in Rome. In the winter and spring months in India the conditions are very favourable to pneumonia—cold nights, poor insanitary quarters, a badly clothed population and extreme heat during the day. I should say—that pneumonia is responsible for a great many deaths in India—take the average death-rate for India at 36,000

per million—the figures for Rome would give nearly 12 per cent as the death-rate from pneumonia in India, and this I should say, is within the mark

2 Pulmonary tuberculosis—"A disease of all times and of all countries"—"The pestilence that stalketh at noonday" I suppose there is no disease more frequently diagnosed as malaria than pulmonary tuberculosis. Time and again I have seen patients sent away from the hospital with malaria and quinine marked on their tickets, when the most cursory examination of their bared chests would have shown advanced tuberculosis. A patient complains of weakness and fever, a hurried glance at the patient, pulse perhaps felt, and immediate diagnosis of malaria or malarial cachexia is made. If it is thus in the later stages of phthisis, how much more so must it be in the earlier and more obscure stages, and if in our dispensaries such an erroneous diagnosis is made, what of the ultimate statistician, the village chowkidar—all are fever, all are malaria.

Osler even in his text-book states that in malarial regions tuberculosis may set in with a fever typically intermittent in character—a daily chill-fever and sweat, and that in Philadelphia and Baltimore, where ague prevails, many cases of early tuberculosis are treated for ague. He further states that such cases pursue a rapid course.

During the last 10—15 years a very marked decline in the mortality from pulmonary tubercle has occurred throughout the civilised world—this unfortunately cannot be said of India—on the contrary, the general impression is that it has greatly increased in recent years. Dark races generally seem to be very prone to tubercle. Negroes in America, and in the West Coast of Africa, Hotentots in South Africa, and the South Sea Islanders all seem to have no resistance whatever against tubercle. Many years must elapse before it can be accurately shown what the actual death-rate in India from tuberculosis is—one may hazard a guess and say that it cannot be far from 20 per cent of the total.

3 and 4 The incidence and mortality of typhoid and "other fevers" are very difficult to estimate.

5 Liver abscess and 7 abscesses in general must very frequently be returned under the general term of fever.

6 Syphilis also I have seen carelessly and erroneously diagnosed as malaria—where the fever and anæmia have been very pronounced.

8 Scoury is often a puzzling disease, and in the extreme anæmia and debility which is seen in this disease, there is an opportunity for diagnosing malaria, and malarial cachexia.

In the report of the Sanitary Commissioner of the United Provinces for 1910 Annual Form 6A, pages 12b and 13b, the total number of deaths in the district of Jhansi is given at 22,831, of

which 15,244 were due to fever, 412 to bowel-complaints and 1,020 were due to respiratory diseases—the ratios per 1000 being fever 29.52, bowel-complaints 7.6 and respiratory diseases 1.89. It is hardly necessary to point out how utterly unreliable, not to say positively dangerous such figures are, if these figures were anything like true, Jhansi would be in the same deplorable plight as the West Coast of Africa.

It has been no part of my object in writing this article to draft a model death-rate for Jhansi or India in general—this would only bring ridicule upon me.

There is one other group of diseases, however, which I might mention which is of the greatest interest to all who make any study of the social conditions of this country. Now if there is one thing more certain than another on studying the geography of disease it is this that intestinal disorders follow the annual journey of the sun. From the pole to the equator there is a crescendo in the ratio of deaths from these disorders. Every year as the hot weather comes round we find in England, America and Continental Europe, there is a great rise in the ratio of deaths—often indeed in the hottest and driest years there are veritable epidemics.

Clemow has shown that Scotland in 1897 had 510 deaths per million, France in the decade 1880-89 showed an average ratio of 2,020 per million, while Italy in 1895 has 3,683 deaths per million living from diarrhoea disorders, and this does not include dysentery. Jhansi in 1910 had a ratio of deaths from diarrhoea and dysentery of 1,800 per million living. How happy India would be if this ratio were even approximately true. Of the countless million of children that die generation after generation in India what proportion of deaths can be assigned to intestinal disorders. It cannot be calculated but it must be truly enormous.

I have found that amongst English people there are 3 generations in a century, that is, a man has a child at 30 or a little over—his son has a child at the same or a later age, and his grandson has a child at a little later age still. Now the Indian has from 5 to 6 generations in a century. Generation succeeding generation with wasteful rapidity almost every family you enquire into has had 4, 5 or even 6 deaths amongst the children of tender years. That a clerk in my office who informed me that his age was 50 years and his mother's, who was alive, was 62.

I hope I have shown, with some appearance of truth, how fallacious and dangerous the ordinary vital statistics of India are, dangerous indeed when I mislead public opinion and bring pressure to bear on the Governments in India to remedy conditions which do not really exist.

How helpful and useful true vital statistics might be.

The diseases which I have referred to above, are, in my opinion, those which are most frequently diagnosed as malaria. It should not be

so, but medicine, as opposed to surgery, has never had its due share of attention in our hospitals and dispensaries. My object in writing this article is to urge upon Civil Surgeons in small stations where the work is not heavy, to carry out similar observations to those I have done, and to record them. Malaria is no doubt a very prevalent disease during many months of the year, but that it is as omnipresent as the statistics show is not to be believed. During the winter months many districts are probably free from malaria altogether, and my experience of the Gonda, Terai, would tend to show that even in these malarious districts, malaria may not be very prevalent during the cold weather in ordinary years. A scheme, I believe, is at present under the consideration of the Government of India for the better registration of births and deaths. I am sure Civil Surgeons will look with a very friendly eye on all such attempts to improve the vital statistics of India; but it will be a long time before any statistics in India other than those emanating from medical officers of regiments, corps and institutions can be considered to be as reliable as those of the Registrar-General.

A Mirror of Hospital Practice

ON SOME NEW ANOPHELINES OF CALCUTTA AND ON THE SEASONAL PREVALENCE AND VARIATIONS OF ANOPHELINE FULIGINOSUS OF CALCUTTA

By RAI U N BRAHMACHARI BAHADUR,

M.A., M.D., Ph.D.,

Teacher of Medicine at the Campbell Medical School, Calcutta, and Member, Provincial Malaria Committee, Bengal

In their reports to the Malaria Committee (1902), Stephens and Christophers describe the prevalence of the following species of Anophelines in Bengal:

A. rossii, *A. fuliginosus*, *A. sinensis*, sub-sp. *nigerimus*, *A. lindesayi*, *A. metababs* and *A. christophersi*. Of these, they found *rossii*, *fuliginosus* and *nigerimus* in Calcutta and certain of its outlying portions. Subsequently, Alcock collected some *listoni* in Calcutta and Adie in a private communication tells me that he found some *listoni* in the tank of the Indian Museum.

In their Monograph on the Anophelines of India (Second Edition), Liston and James mention the presence of the following additional species in Calcutta: *Myzorbynchus jamesi* and *Myzorbynchus barbirostris*.

My work on the Anophelines of Calcutta extends over a year. During this period I have discovered the following more additional species in Calcutta:

The first of these is *Myzomyia ludlowi*. It is allied to *M. rossii* but has speckled legs. Recent

investigations of Christophers have proved this to be the carrier of malaria in the Admans.

The second new species is *M. culicifacies*. It is allied to *M. listoni*, but differs from it in some important points, such as fine dark areas on the costa, black-scaled third longitudinal vein, presence of only three white patches on the costa including the one at the apex, etc. It is a very efficient malaria-carrier in nature.

The third new anopheline is the one, a specimen of which was exhibited by me in the April meeting of this Society last year and subsequently described in the July number of the *Indian Medical Gazette*. This belongs to a new species which has been designated as *M. brahmachari* by Christophers. Its great peculiarity is that its proboscis is white-scaled in its outer half. In their Monograph, Liston and James point out that, so far as they are aware, *Nyssomyia punctulata* is the only anopheline which is white-scaled in its outer half. This new *nyssomyia* is, therefore, the second species of anopheline in India which has also got the same characteristic.

All the above *myzomyias* were found in the tank of the Campbell Hospital, Ludlow being found in from November to February, *culicifacies* in February and *brahmachari* in February and March.

I have also found *listoni* in the same tank in which there is no running water, just as Alcock and Adie found them in the tank of the Indian Museum. *Listoni* were found from October to March.

The largest number of *stephensi* were found in a masonry reservoir containing water for washing cooking utensils.

Contrary to the observations of Stephens and Christophers, I found *A. fuliginosus* to be the most common anopheline in Calcutta.

Out of nearly 12,000 larvae caught from July to January, about a ninth developed into the adult stage, the remainder having died. This probably gives us an idea of the enormous number of larvae that do not pass to the adult stage. It would be most interesting to observe the influence of seasonal variations on the natural destruction of anophelines in the larval stage.

Seasonal variations of a *fuliginosus* of Calcutta

The characteristics of a *fuliginosus* of Calcutta:

(1) The costa has six long black scaled areas separated by white spots.

(2) There is a frequent tendency to the occurrence of long white bands in the femur and tibia and sometimes in the first tarsal segment in the ventral and lateral aspects of the legs. These bands are parallel to the long axis of the legs.

(3) Frequently, there are no white bands or scabs at the junction of the 4th and 5th tarsal segments in the forelegs. Similarly in the mid-legs there are generally no white bands or scabs at the junction of the 3rd and 4th tarsal segments as well as of the 4th and 5th tarsal segments.

(4) The third longitudinal vein is generally white-scaled in the middle of its course, but sometimes, without any other seasonal variation, it may be black-scaled especially in winter.

(5) The tip of the fifth tarsal segment in the hind leg sometimes contains a minute black spot.

(6) The peculiar seasonal markings of the tarsal segments of the hind legs, which I shall describe presently.

The typical fuliginosus of Calcutta has three tarsal segments perfectly white in the hind legs. As winter approaches, faint dark spots appear in the proximal ends of the third tarsal segment. These spots increase till half and sometimes almost the whole of the segment becomes black-scaled.

The tip of the fifth tarsal segment is more frequently found to have a minute black spot during winter. In some cases, almost the whole of the fifth tarsal segment in the hind leg is found black during winter.

In this season, the third longitudinal vein is more black-scaled in the middle of its course than white.

Contrary to what is found in *Adei*, the palpi of fuliginosus of Calcutta are always the same as in the type, the palpal bands being always three. The seasonal variations are not so constant as in *Adei*. While it is more frequent that in winter the third longitudinal vein is more frequently black and the third tarsal segment in the hind leg also tends to be black, we find that this is not invariably the case, nor is the amount of darkness constant and sometimes this may be completely absent.

Lastly the junction of the third and fourth tarsal segments in the mid leg is frequently found to be black throughout the year.

The *A. fuliginosus* of Calcutta differs from *Adei* in the following points—

(1) The palpal bands are always three and never four.

(2) The junction of the third and fourth tarsal segments in the mid leg is more frequently black-scaled and only occasionally white-scaled.

(3) The tip of the fifth tarsal segment in the hind leg has sometimes a minute black spot especially in winter and sometimes the whole of the segment tends to be black.

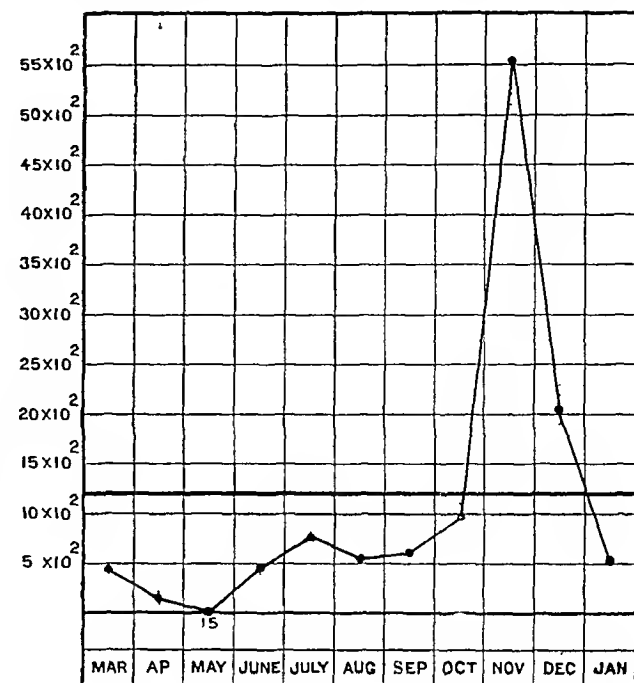
(4) The seasonal variations are not so constant as in *Adei*.

The seasonal prevalence of anopheline fuliginosus of Calcutta.

The method by which I have estimated the anophelines in a locality depends upon careful daily larval counting from the breeding places. I already described this method in the meeting of this section of the Asiatic Society last April, and subsequently in the meeting of the Central Malaria Committee held in Bombay last November.

Assuming that the number of adults are proportional to the number of larvae caught, I have drawn the accompanying curve from the monthly larval counting of *A. fuliginosus*.

It will be seen from this curve that the number of a fuliginosus is lowest about May and highest



towards November. There is also a rise in their number in July.

It must, however, be mentioned that the sides of the tank, from which the larvae were collected, were cleared out in May and December, and the diminution in the number of larvae caught may have been partly due to the clearing out of the weeds. That this is not the only cause of their diminution is borne out by the fact that the number began to diminish before the cleaning of the sides of the tank was started.

The highest rise in the anopheline curve in Calcutta seems to correspond to the greatest prevalence of malaria in Bengal, *i.e.*, in November.

The numerical determination of anophelines in any locality is a very important matter for malariologists to study, as by this we can forecast the occurrence of intense or epidemic malaria. As there are no accurate methods for their determination, it would be very interesting if observers would test the accuracy of the method described by me—a fact that can only be settled by careful and laborious observations for several successive years and this is what I myself also propose to do.

LAMBLIA INTESTINALIS AND ITS POSSIBLE CONNECTION WITH POONA DIARRHŒA

By H. HOOTON,

MAJOR, I.M.S.,

Actg Civil Surgeon, Poona

In the autumn of 1910 I had occasion to take an old Indian patient, who had been under my

treatment intermittently for some 18 months for a chronic form of diarrhoea, to consult Dr Daniels in London. The diarrhoea had been most resistant to ordinary methods of treatment, and though occasionally less marked, had never entirely ceased. It was worst in the mornings. The stools, roughly 4 to 6 a day, were of a light brown colour, and often frothy. There were vague pains in the abdomen, and the patient formerly well nourished had lost much weight, and was in a very depressed condition though just able to carry on his official duties. Dr Daniels, having heard the history and examined him, told me that the symptoms resembled those of several tropical cases in which he had found *Lambliæ* and expressed a desire to examine the stools, and on receiving a specimen the next day he reported that *Lambliæ* was present. Further, he informed me that he was inclined to regard the organism as being concerned in the causation of this type of diarrhoea, and he advised a course of treatment with beta naphthol on that hypothesis. This was commenced at once with striking results. The diarrhoea almost immediately ceased, and subsequent slight attacks have proved equally amenable to the same treatment.

The similarity of the symptoms in this case to the disease which has been the scourge of Poona during the monsoon for some years past had struck me, and since my return to this station I have been on the look-out for an opportunity of examining some typical stools. The disease is, however, not at all frequent except in the rains, and it was not until a few days ago that I came across a case in the acute stage. The feces in this, on examination, turned out to be swarming with *Lambliæ*, and although there has been little opportunity so far of making further investigations, it appears to be worth while to draw attention to *Lambliæ* as a possible cause of the condition. I understand a special officer is shortly to be deputed to investigate the whole question of the monsoon diarrhoea in Poona, and no doubt his investigations will settle this point amongst others. On looking up the literature at my disposal, and referring to some notes kindly sent me by Major Hutchinson, I find that most observers have so far acquitted *Lambliæ* of any injurious effects. The organism is stated (Braun) to occur in the small intestine of healthy persons, as well as in cases of serious diarrhoea, being liable to make its appearance in the stools at any time, on any transient increase of peristalsis. Castellani and Chalmers, on the other hand, describe a "flagellate diarrhoea" of which *Lambliæ* is noted as one of the causes, and state that *Lambliæ* is considered by many authors to be the cause of certain cases of diarrhoea. Our observations in this hospital are so far confined to typical case of Poona diarrhoea, three diarrhoea cases of other types, and 38 persons not suffering from diarrhoea who had been given an aperient to flush the intestine. The results so far are as follows.—

1 typical Poona diarrhoea	present
3 other diarrhoea cases	present in 1, absent in 2
38 cases other than diarrhoea	present in 1 (Bright's disease) absent in the others

As regards the ordinary symptoms of Poona diarrhoea, the case above quoted may serve as a very fine example. People suffering from it are usually not altogether incapacitated for work, but drag on a very wretched existence during the rains. There is often nausea, with loss of appetite and great depression, and ordinary drugs have little influence in checking the symptoms. The disease is markedly seasonal, and improvement almost always follows the cessation of the rains, the few cases that persist in the cold weather recovering at the beginning of the hot season. In this connection it is interesting to note the suggestion of Col Lyons that the cause might very probably prove to be some abnormal solid constituents of the water-supply during the monsoon.

Whatever may be the result of later investigations I shall feel inclined to try beta naphthol in the treatment of the complaint, in doses of 5 grains or more in cachet form, 3 times daily.

SERVICE NOTES

LIEUTENANT COLONEL H. Fooks, I.M.S., acted as P.M.O., Adon Brigade, when Colonel Cleveland, I.M.S., went on leave.

LIEUTENANT COLONEL C. Duer, M.B., F.R.C.S., I.M.S., Civil Surgeon, Simla West, held charge of the office of the Civil Surgeon, Simla East, in addition to his own duties, with effect from the afternoon of the 26th January to the 11th February 1912.

THE services of Lieutenant Colonel H. B. Melville, M.B., I.M.S., are replaced at the disposal of the Government of the United Provinces.

MAJOR H. A. Smith, M.B., I.M.S., Civil Surgeon of Agra, is appointed to be Civil Surgeon, Simla East, with effect from the date on which he assumes charge of his duties.

ON being relieved of his duties as Professor of Anatomy at the Medical College, Calcutta, Major C. R. Stevens, M.B., F.R.C.S., I.M.S., is appointed to be Professor of Clinical and Operative Surgery, Medical College, and *ex officio* Surgeon to the College Hospital.

THE services of Captain G. F. I. Halkness, I.M.S., are placed temporarily at the disposal of the Government of Bombay, with effect from the 9th February 1912.

CAPTAIN W. W. JEUDWINF, M.B., I.M.S., held charge of the office of the Civil Surgeon, Simla East, in addition to his own duties as officiating Civil Surgeon, Simla West, with effect from the afternoon of the 1st January to the forenoon of the 26th January 1912.

LIEUTENANT JOHN GLENDINNING BRIDGENS HAND, M.B., is promoted Captain, I.M.S., from 30th January 1912.

The next issue of this Gazette will be a special one devoted to a reply to the question—what has the I.M.S. done for India?

Indian Medical Gazette

MAY

MEDICAL SERVICE IN CAMPAIGNS *

THIS is an extremely interesting little book, for it gives a clear, well-written and up-to-date account of the present medical organization for war in the American Army.

That organization was primarily based on the experiences of the American Civil War, where in the spring campaign of 1864 the medical arrangements for the care and transport of the sick and wounded at last became perfected after three long years of hard fighting. But the organization has been brought thoroughly up-to-date by a close study of recent campaigns and the effect of modern weapons. The results of the Russo-Japanese War in Manchuria and the experiences of the large numbers of troops recently kept mobilized on the Mexican frontier are referred to in this book and add to its value.

In the wars of the future enormous numbers of wounded must be expected, so that the great value of the elaboration in peace of efficient military medical arrangements for war is very evident. The Americans, a practical people, thoroughly appreciate the fact that the object of war is to win battles and that, therefore, the function of the medical services is to maintain the health of the troops by sanitary measures and clear the ranks of inefficient in the field. They have to treat and return to the ranks cases of slight wounds and mild illness and, while they must do their best for cases of dangerous wounds and serious disease, they must realize that attention to less severe cases is of more importance in that by their speedy return to the ranks, the fighting force of their army is increased. In short, the medical department must not expend all its energies on those little likely to be of further use in the campaign.

We favourably reviewed the first edition of this book, but many important changes in the way

of increased medical personnel have since been made in the American organization. Disregarding entirely the humanitarian points of view, on which no stress can be laid in time of war, recent experience has caused the value of the medical service as a military factor to be recognized. It has become known how large a proportion of wounded, under modern conditions, will recover quickly and be able to return to the ranks if medical aid is prompt and medical arrangements efficient. It is found that an ample medical staff restrains men from leaving the ranks to assist wounded comrades and has a markedly beneficent effect on the morale of the troops.

To their already large medical staff the Americans have now added one medical officer to each regiment and two to each Ambulance Company (now a separate unit and no longer a division of a field hospital). The total number of medical officers in a division has been increased from 81 to 101.

It is very interesting to contrast the organization of our Home Army Division with that of the American Division. Both have the same approximate strength, viz., 20,000 men.

The Americans thoroughly recognize the paramount necessity of large staffs and at the head-quarters of a division have 1 Lieutenant-Colonel (chief surgeon), 1 Lieutenant-Colonel (inspector), 1 Major (assistant), 1 Captain (assistant). In our Home Army Division and also in a division of the Indian Army, 1 Administrative Medical Officer and 1 "Medical and Sanitary Officer" are considered sufficient to direct the medical services of their unit. But that is not all. In addition to this inspector and two assistants, the chief surgeon of an American Division is aided by a director of field hospitals and a director of Ambulance Companies. Such directors are unknown in our organization. Surely the practical Americans have not allotted this large staff without very weighty reasons? If they are correct, it is impossible that our meagre allotment of medical officers to the head-quarters of a division can efficiently carry out their duties.

The American Division has four medical officers per regiment (approximate strength 1,500 men), 4 field hospitals with 5 medical officers, and 108 beds each, 4 ambulance companies with 5 medical officers each, (the two directors of field hospitals and ambulance companies are

* Medical Service in Campaign. A Handbook for Medical Officers in the Field. By Major Paul Frederick Straub, Medical Corps (General Staff), United States Army. Prepared under the direction of the Surgeon General, United States Army, and published by the Authority of the War Department. Second Edition. Price \$1.50 net. Philadelphia: P. Blakiston's Son & Co., 1012, Walnut St., 1912.

not included), 2 evacuation hospitals with 14 medical officers and 324 beds each, and 1 base hospital with 20 medical officers and 500 beds. To our Home Division is allotted 1 medical officer per regiment (approximate strength 1,000), 3 field ambulances with 9 medical officers and 150 beds each, 1 clearing hospital with 7 medical officers and 200 beds, 2 stationary hospitals with 7 medical officers and 200 beds each, and 2 general hospitals with 20 medical officers and 520 beds each. It will be seen that we have more field medical units and many more "beds" towards the base on the line of communications and fewer medical officers at the front. The Americans evidently count on expanding their field medical units on the line of communications. They recognize that they can improvise "beds" towards the rear but not medical officers at the front!

The book discusses the "station for slightly wounded." It is a new feature in the American organization and is designed to prevent the slightly wounded and exhausted from over crowding the field hospitals at the front. An important point is demonstrated regarding the evacuation of wounded. It is always assumed that this will be assisted by the use of supply wagons and there is no doubt that these would be to some extent available, but, as Major Straub points out, the supply service in the field is so important that no serious interference with it can be tolerated even in the interests of the sick and wounded.

"Transport columns" for conveying medical casualties down the line of communication have, therefore, been adopted in the American army. But it is a curious fact that though Major Straub emphasises how necessary it is that hospital provision should be made at every post along the line of communications, yet this has not been done, and the chief surgeon of an American Division will have to work out this question on the field! Major Straub considers that the Red Cross organization will have to be depended on for this duty. In India the difficulty has been solved by allotting sections of stationary hospitals to each post on the line of communications. Clear directions are given as to the drafting of medical divisional field orders. The expectant treatment of penetrating wounds of the abdomen is discussed and advocated. The book is an excellent one, and its study is recommended.

Current Topics.

CALCUTTA SCHOOL OF TROPICAL MEDICINE

IN view of the unique advantages which Calcutta possesses in her great Hospitals and Medical College it has long been an anomaly that medical men with Indian experience have to go to London or Liverpool in order to obtain a diploma in tropical medicine. This will shortly be remedied when the new School of Tropical Medicine is started in Calcutta, with a degree in the subject at the University. The course will be held during the cold weather months, when the city is at her best, while it is expected that the degree will be recognised as qualifying for accelerated promotion and that study leave will be granted to service officers to enable them to attend the school. A new biological laboratory is to be built, together with a number of research rooms to enable the many important diseases prevalent in our hospitals to be vigorously studied under the most advantageous conditions, which will include a working room kept at a temperature which will allow of gelatine media being used all the year round. Courses of lectures will be given in Tropical Medicine, in the Pathology of tropical diseases and in those parts of biology which are essential, including a study of disease conveying insects, intestinal and protozoal parasites, etc. In time students should be attracted from other countries as well as from all parts of India. It is hoped that the vast amount of clinical material in the European General Hospital may also be utilised for teaching purposes, while it would be a great advantage if the former system can be reverted to of all Indian Medical Service officers being sent to Calcutta for a course of instruction in Tropical Diseases on first coming out to India. In short, the possibilities of the new institution are unlimited, and in due time it can scarcely fail to make Calcutta the metropolis of the world as far as the study of tropical medicine is concerned.

PAY OF CIVIL ASSISTANT SURGEONS

THE new scale of pay for Civil Assistant Surgeons in Bengal has been published in the *Calcutta Gazette* (March 6th, 1912) and will be found to be exceedingly liberal and should be highly satisfactory to this excellent body of Indian practitioners. The steady rise of pay year by year from 100 to 300 and afterwards for selected men to 325 to 350 and when appointed as Civil Surgeons to 500 will be found very attractive.

Now that this has been wisely and liberally settled, we hope there will be not much longer delay in settling the pay and other grievances of the Military Assistant Surgeons (I S M D), who are patiently awaiting a reply to their memorial.

The following extract is from the Government Resolution on pay of Civil Assistant Surgeons —

"It was soon felt that the former concessions, though valuable to senior officers, did not sufficiently improve the pay in the first years of service. In 1908, memorials were received from Civil Assistant Surgeons urging the necessity of improving the conditions of service and suggesting certain methods of doing so. Orders have since been passed on all the other suggestions, but the principal complaint, *viz*, the alleged inadequacy of the pay has been under consideration, and the question has now been finally decided by the Government of India and the Secretary of State. In the place of the existing scale of pay a time scale has been sanctioned, and the two scales are compared below —

EXISTING SCALE	NEW SCALE NOW SANCTIONED	
	Years of service in the assistant surgeons department	Rate of pay Rs
Third grade, under 7 years' service, Rs 100 a month	0-2	100
	3	110
	4	120
	5	130
	6	140
	7	150
Second grade, under 14 years' service and after passing a professional examination, Rs 200 a month	8	160
	9	170
	10	180
	11	190
	12	200
	13	210
	14	220
First grade, after 14 years' service and after passing 2nd professional examination, Rs 200 a month	15	230
	16	240
	17	250
	18	260
	19	270
	20	280
	21	290
	22-24	300
Senior grade, selected from 1st grade without examination, Rs. 300 a month	Ten per cent of the total cadre to be in these two grades, which are to be filled by selection on merit alone from officers having more than 14 years' service	325
Civil Surgeons, selected from senior grade, Rs 350-30-500	Civil Surgeons	350-30-500

In future, after two years' service, Civil Assistant Surgeons in Bengal will receive an annual increment of Rs 10 until they reach the pay of Rs 300 a month, but the passing of examinations after 7 and 14 years' service is still a condition precedent to the drawing of any further increment. Above the pay of Rs 300, there will be two grades on Rs 325 and Rs 350, ordinarily limited to 10 per cent of the service and filled by selection from all officers who have completed 14 years' service. In addition, the appointments to Civil Surgeoncies, eventually seven in number in the *Province as at present constituted* (*i.e.*, before 1st April, 1912) on a pay of Rs 350-30-500 will still be open to members of the service.

These orders will have effect from the 1st April 1912

THE LATEST PLAGUE REPORT

We have often commented upon the extraordinary method adopted by the Plague Advisory Committee for publishing their invaluable Report on Plague in India. It has appeared erratically in five previous issues of

the *Journal of Hygiene* within the past few years, and now as a continuation of volume X we have what is quaintly called "The Journal of Hygiene Plague Supplement I."

The supplement opens with an appreciative account of the life and work of the late Major George Lamb, I.M.S., who died in April 1911, and the portrait given is an excellent one.

This issue consists of 206 pages and of 7 papers, some are signed by individual members, some are not signed, and we do not know if the whole Committee is responsible or not for the opinions expressed.

At any rate, all the articles are good and worth reading. In the first paper we find that the only Indian flea of importance is that now called *Xenopsylla cheopis*, and he prevails extensively in the opening months of the year.

The next most interesting article is by Mr M Greenwood and deals with the connection between proximity of railroads and the frequency of epidemics as illustrated in the Amritsar district. The following "highly probable" conclusions are arrived at —

(1) In districts containing large cities, villages near a line of railway are liable to a higher rate of plague epidemic than villages not so situated.

(2) This is probably due to increased opportunities for personal transit, not to the exportation or importation of merchandise.

(3) In a district favourably situated for personal intercommunication the spread of plague can be much better explained on the hypothesis of reimportation than on that of recrudescence.

(4) In purely or mainly agricultural districts, proximity to railway does not increase the liability to plague outbreaks.

Mr Greenwood's next paper is very long and contains 56 pages of figures, but we think the following summary given by him (at p 89 of the Report) will give our readers his views very clearly —

The detailed discussions of the conclusions here collected will be found in previous sections together with the cautions necessarily to be borne in mind when weighing them.

(1) Large villages tend to be infected earlier in the plague season than small ones.

(2) In villages of the same size total mortality is appreciably correlated with length of exposure to infection. The intensity of the relation, although quite appreciable, is not sufficient to account for the large differences in mortality rates noticed in villages of about the same size. There is some reason to think that villages infected before the months in which plague, owing to seasonal condition, is most prevalent do not suffer very appreciably more than villages not exposed until March or April.

(3) In nearly all cases, large infected villages suffer less than small ones.

(4) Plague does not occur at all in epidemic form during July, August and September, in the districts

* Those who wish to see this report in its entirety can obtain it in bound volumes 20s net, from Cambridge University Press, or Macmillan & Co., Bombay and Calcutta. The new Supplement costs 7s net.

analysed. The annual variations in temperature and rainfall observed during the epidemic season are not appreciably associated with variations in the rate of mortality.

(5) Differences in plague mortality in different districts which are extremely marked do not seem to be associated with climatic distinctions.

(6) Within any one district the variations in the rate of mortality observed in different subdivisions are considerable.

(7) A high rate of mortality in any subdivision is not necessarily accompanied by a wide dissemination of plague.

(8) There is no evidence that certain districts are permanently subject to a high rate of mortality. Local conditions making for an unusual degree of severity appear to vary from epidemic to epidemic.

(9) The rate of plague mortality in a village is seen to depend upon three factors—(a) length of exposure to infection, (b) number of inhabitants, (c) situation. Of these (c) is probably the most important, how it acts, however, cannot be determined from the present material.

We now turn to the anonymous paper which we consider the most useful in the whole supplement, that is, the one on observations on plague in Eastern Bengal and Assam.

We have often pointed out the need for such an investigation, and at the request of the Sanitary Commissioner for Eastern Bengal the question was taken up and the report of work done in 1909 appears two and a half years later, which shows the value of the extraordinary method adopted of issuing this piecemeal report.

In Eastern Bengal there had been practically no plague—beyond a few imported pneumonic outbreaks and very few bubonic cases.

We have always asked why, and pointed out that if the rat flea explained the prevalence of plague, it should equally explain its absence, and the failure of imported cases to give rise to outbreaks, though cases have been imported more frequently than is generally known.

The following is the rather too brief summary given by the writer (p. 192) —

“(1) The province of Eastern Bengal and Assam has suffered very little from Bubonic plague, a few epidemics only of pneumonic plague have occurred.

(2) The physical features of the country protect it to some extent from the importation of infection and would tend to limit the opportunities for spreading the disease if it once broke out.

(3) The freedom of the province from plague can chiefly be attributed to the scarcity of rats in the houses as compared with other parts of India.

(4) *M. rattus* is comparatively rare in Bengali houses because of the habits of these people in respect to their greater regard for neatness and tidiness both in and around their dwellings which diminishes the food supply of the rodents.

(5) The structure and design of the Bengali home, whether it be of the solid masonry type on the one hand or of the flimsy matting or grass types on the other, afford little shelter for rats.

(6) The presence of natural enemies of *M. rattus* such as the musk rat may assist in maintaining a low rat infestation of the houses.”

The writer gives a very favourable account of the neatness and tidiness of the houses of Eastern Bengalis as compared with those of the inhabitants of other parts of India, and while these

habits of tidiness help to keep away the rats, the construction of the houses does even more. When the houses are *pucca*, i.e., built of brick and mortar, the walls naturally afford little harbourage of rats, and the *katcha* houses of thin bamboo matting or wattle with a roof of corrugated iron, split bamboo or thin thatch gives even less shelter to these rodents, the country-tiled roof which are so infested with rats up-country are not seen in Eastern Bengal. The illustrations given in the report admirably show the differences between the honeycombed rat-infested thick mud walls of a Bihar house and the thin-walled iron-roofed bamboo-mat house of the milder climate of Eastern Bengal. In fact, the rat is a domestic animal in the thick mud walled houses necessary to protect against heat and cold in Upper India, while in Eastern Bengal he finds but few places to live in and in fact is not a domestic animal.

THE INTERNATIONAL PLAGUE CONFERENCE AT MUKDEN

It is one of the curiosities of the International Plague Conference held at Mukden in Manchuria that among the long list of delegates from all parts of the world none appeared to represent India where there are more men intimately acquainted with the epidemiology of plague than there are in all the rest of the world put together. Italy, Germany, France, America, Japan, Russia, China and even Mexico and the Netherlands send their deputies and representatives, yet only one appeared from India, and the English representatives, able men in their own way, were a Local Government Board Inspector, a Lister Institute bacteriologist (who has, however, worked in India from 1905-07) and the Physician to the H. B. M.'s Legation at Peking.

The present report is certainly a valuable contribution to the enormous mass of plague literature which has grown up during the past sixteen years. It contains nearly 500 pages and reports very fully the work done in the 23 sessions of the Conference. Perhaps, Part III which is a summary of the knowledge gained from the study of the epidemic is the most valuable part of the report as it is the one which will be most carefully read by the medical reader.

We have in our March issue already discussed the conclusions of this Conference as related by Dr. R. Farrar, one of the delegates from Great Britain and the interim report signed by 11 representatives of various countries was admirably summarised by Dr. Farrar in the address which we have already discussed. Certain points, however, still need further investigation. The report states that “there is strong presumption for believing that tarabagan disease is closely associated with pneumonic plague. and with the recent outbreak; but

systematic investigation is still needed as to whether this epizootic disease does exist among tanabagans and other rodents."

Strict isolation of pneumonic cases is absolutely necessary. The use of simple masks (three-tinted gauze and cotton wool pad), and the use of overalls and gloves by the medical and sanitary staff is recommended, as well as the use of a protective vaccine by Lushig and Galiotti's or Strong's method.

The report is admirably edited by Dr. R. P. Strong of Manila, and will long remain a complete record of this fierce and virulent epidemic of pneumonic plague.

We can strongly recommend the report to all our readers interested in the epidemiology of plague.

THE CAMPAIGN AGAINST MALARIA IN ITALY

IN this very useful resume, translated by Major N. P. O'Gorman Lister, I.M.S., the Deputy Sanitary Commissioner in Burma, we have an admirable account of the great and generally successful fight that has been waged against malaria in Italy.*

The report itself appeared in 1910, and it summarises the conclusions of the strong and representative Italian Commission on the utility of the anti-malarial measures in force in Italy from 1901 to 1908.

That an enormous reduction in the mortality figures for malaria has taken place in Italy there is no doubt. In the years before 1902 the mortality figures were given at from about 16,000 to 10,000 yearly, this figure has been steadily reduced to only 3,477 in 1908 and to 4,144 in the 3-year average 1906-08. This is a striking diminution in mortality.

What were the new factors introduced which account for this remarkable improvement? First of all, there is the enormously increased use of quinine, especially in quinine sold by the State which rose from about one and a third million kilos in 1902† to no less than over 24 million kilos in 1908.

Other important factors have been improved Agriculture, and there has been a sort of beneficent circle in that better health produced prosperity, and prosperity induced a raised standard of individual resistance.

The report has much to say on what in India we call the prophylactic issue of quinine. It is undoubtedly most difficult to carry out under satisfactory conditions of observation. Again, the question of preventive treatment is mixed up with curative treatment. If a person has never had malaria or "not for a long time the 'prophylactic' issue of quinine is intended to counteract the infection in case this person who is

living in conditions where he is exposed to infection, does become infected. In the case of those who have recently suffered from malaria this 'prophylactic' issue is, properly speaking, 'curative,' but still remains 'prophylactic' in that it is intended to prevent him suffering from the inevitable relapses which will result without such treatment."

The statistics of the Red Cross Society are subjected to severe criticism and are said to be based on doubtful observations. It could scarcely be otherwise in the work of a society so widespread in its action.

The tendency of this report is, on the whole, against the preventive treatment of healthy persons by quinine, but we venture to think that while admitting that this method is difficult and is often more nominal than real, it becomes still more difficult to limit the use of quinine only to the sick, who can say that he does not harbour the parasite? Is such a person in a malarial locality to wait till his blood is repeatedly examined and found free or till his infection is demonstrated by the microscope or by an attack of the fever itself?

The Committee sum up by saying that the best system of malarial prophylaxis embraces the following methods—

1 *Hygienic Treatment of the Soil*—Hydraulic reclamation constitutes an advance towards a state of more perfect hygiene, but it does not suffice, since it deals with large canals, not with the smaller and more useful ones, made by the spade of the peasant. The real work of reclamation lies in the intensive culture of tracts previously drained by the aid of hydraulic reclamation. State quinine has availed to reduce sickness and mortality from malaria, but the disease has not disappeared except in places where intensive cultivation has overspread the land. In these latter circumstances malaria is found to disappear even where the related mosquitoes have continued to infest the locality. It is necessary then to insist particularly upon the smaller works of reclamation so often neglected in favour of more grandiose projects which entail enormous expense and which are of less use from a health standpoint. Especially is it necessary to prevent the formation of artificial collections of water.

2 *Hygienic Treatment of the Human Being*—The Commission is of opinion that the prophylactic campaign should be inspired less by the idea of keeping individuals healthy, and more by that of destroying foci of infection by the treatment of the sick. For this object it is not sufficient to proceed to distribute ever increasing quantities of quinine, such a course is necessary, but this is not all. It is essential to secure compulsory notification of cases of malaria, to ensure accurate diagnosis, and to institute sound and regular treatment, not alone during the epidemic period properly so called, but also during the intra-epidemic periods.

3 *Social Prophylaxis*—Side by side with the hygienic treatment of the soil and of the human being measures must be taken to increase the resistance of the healthy organism to the disease. Economic misery and physical wretchedness which is its child open the way to infection. That military officers remain immune whilst soldiers next door to them are struck down by malaria to an extent much less again than is the case with the civil population, is a fact proved by statistics. In general, good feeding, a healthy dwelling, sufficient sleep, physical well-being, are the most favourable conditions for the preservation of man

* Calcutta: Thacker, Spink & Co. Price Rs. 2.

† To bring this home to Indian readers we take 1 kilo to equal 1 seer. 24 million kilos equals over 6 lakhs of pounds of quinine.

from malaria as well as other diseases. It is this law which governs the general pathology of labour. A further important factor is the sanitary education of the masses whom it is indispensable to familiarise with the principles of malarial epidemiology and prophylaxis."

HEAT PROSTRATION

In the *Boston Medical and Surgical Journal* (Oct. 26th, 1911) Dr. W. D. Reid had a useful article based on his not inconsiderable experience of 158 cases, during a heatwave in Boston, U. S. A., in July 1911. The temperature was not what we in India would call high, on four days only of the period 2nd—13th July did it reach 100° F, and 80° F at midnight was frequently recorded. The humidity varied from 56 to 76.

Dr. Reid divides the cases into what for want of better terms he calls (1) heat exhaustion, (2) heat prostration and (3) heat-stroke. This will be admitted to be a useful clinical classification.

He describes the symptoms of each class as follows—

As regards Class I, the heat exhaustion cases. These patients commonly present a moist cool skin with subnormal temperature occasionally as low as 95° or 96°. The pulse is small and rapid and the patient is very pale and prostrated, not rarely unconscious. This patient has usually been subjected to long continued high temperature not necessarily in the sun, combined with physical exertion.

Class II, the so called heat prostration cases, comprised the largest number in our series and with the lowest mortality record. This patient had a temperature varying from normal to 102° or even 103°. Many felt dizzy, nauseated and complained of headache. A few lost consciousness, apparently not to be distinguished from syncope and lasting for a short time only, while practically all felt much prostrated. As stated above, many of these patients had a normal temperature, while of those with fever, the skin retained the moisture and there was an absence of cyanosis or lividity. The circulatory condition of this type was generally good, only moderate stimulation being used on 30 out of the 87 patients.

Class III, which we term heat stroke, is by far the most serious and impressive of the three. There were 61 of these cases, with a mortality of 38. These patients were generally unconscious, livid and often cyanotic, with a hot dry skin and a temperature ranging from about 104° to 110°+ (many rectal temperatures registering at 110°). The more serious of these cases were breathing stertorously, frothing at the mouth, and some vomited large amounts of dark semi-fluid material, almost fecal in character. This type all showed venous engorgement with visible carotid pulsations in the sides of the neck, and a full bounding pulse, except in the moribund cases, where the heart was giving out. The pupils were generally small, often pinpoint, and not reacting to light, knee jerks were frequently absent and a large majority showed considerable muscular rigidity.

The maximum air temperature recorded was 104° F, and maximum humidity 76, and it was on the day when the temperature was 101° F with the highest humidity 76, that the greatest number of cases occurred, 74 cases out of 158 in two days.

It was found that males above 20 were oftenest attacked probably due to greater exposure, but

the fatal cases were more common in middle age and beyond, out of 158 cases 42 died.

As regards complexion, most cases occurred in the brunette type, but as the article says nothing of the relative prevalence of dark and blond types, this is worth nothing. There was one case in a Negro and our Indian experience well knows that these attacks are very common among all the races of India.

There were 38 deaths out of 61 cases classed as heat-stroke, their temperatures rose in many cases to 105 and frequently to 110° and even over.

Alcohol, fatty heart, oedema of lungs and convulsions were early complications, delirium tremens, coma, pneumonia and high temperature were more serious complications.

We may quote Dr. Reid's description of the methods used in the treatment of these cases—

This we will describe briefly according as it seemed successful to those treating these cases. It varied according to the kind of case.

Exhaustion type—Dry rub, blankets, sometimes heaters, ice bag to the head and stimulation according to the individual case. Whiskey, aromatic spirits of ammonia, caffeine and strychnine and occasionally adrenalin were used. We would suggest that in this type adrenalin seems the stimulant whose physiological action is just what is needed.

Prostration type—Ice cup, ice pack, cold pack or sponge bath, according to the temperature, and rest in bed with moderate stimulation as above if there were signs of weakness.

Heat stroke type—Here there are four indications: (1) Reduction of temperature, (2) maintenance of cardiac action, (3) control of convulsions, (4) treatment of complications.

(1) Tub baths and ice packs were the choice in combating the high temperature. If the heart action was poor, the ice pack was always used as the patient need not be moved much. Here let it be noted that vigorous friction seemed essential to good results. Also not a few cases were observed where too long continuance caused too great a reduction of temperature and a condition of collapse was induced. Ice water enemata were used in a few instances, but as a rule a proper use of external measures seemed sufficient.

(2) Maintenance of cardiac action often required stimulation of a heroic type, mostly hypodermically, as the patients were generally unconscious. Generous use of atropine was practised for pulmonary oedema, and strychnine, camphor and various forms of shock enemata were directed at the failing heart. It was the general opinion among the house staff that the use of camphor, given in sterile oil by syringe, was of distinct value.

(3) Convulsions were so frequent in the heat stroke cases that it became the practice towards the end of the so called epidemic to administer a sub q of morphin and sometimes hyoscine with the plan of repeating the morphin in case convulsions nevertheless developed.

(4) The treatment of complications as they occurred varied in no way from cases in which they were the primary disease. About five of these unconscious men required catheterization for retention of urine.

ANTIRABIC TREATMENT AND DOG BITE

We quote the following useful note from the *Journal of Tropical Veterinary Science*—(Vol. VII, No. 1, 1912), page 188.

The difficulty of diagnosis of the disease in a dog is great and the action to be taken in

suspicious cases is not always clear. The following remarks are, therefore, of great practical importance both to Medical and Veterinary men —

"Dr Remlinger publishes in the *Semaine Veterinaire* a résumé which states very precisely the action to be taken in the various cases. In order to obtain full value from it we must remember (1) that our action depends of what we know regarding the dog and (2) that at the present time the necessity for 10 days' observation of the animal is recognised

Dog	MAN
1 Dead 10 days after biting	Antirabic treatment
2 Killed within 10 days after biting	
3 Disappeared within 10 days after biting	
4 Unknown	
5 Alive during the 10 days, and under observation	Antirabic treatment
6 Becomes rabid	
7 Suspected but dies of another disease	Period of observation extended. Antirabic treatment if the dog dies
8 Animal falls sick but is not dead on the 10th day	
9 Animal alive and well after 10 days	No treatment

The practitioner who follows these directions literally, is quite safe. There is no graver problem than that of the diagnosis of rabies."

THE KASHMIR MISSION HOSPITAL REPORT

THERE is always a record of good surgery to be found in this report. We may quote the following remarks —

The number of operations done was 6,000, and of these 1,500 were for eye disease in one-tenth of which cataract extraction was needed. Diseases of bones and joints, due to cold, hereditary disease (*sic*), tuberculosis and other infections are common and account for 567 operations.

"Only sixteen major amputations were done. Although amputation is truly the opprobrium of surgery, thirteen lives were nevertheless saved thereby.

Of tumours we note eighty-five kangri burn cancers, seven ovariectomies and more than a hundred operations for tuberculous glands.

Tuberculosis is terribly on the increase and it is high time that this white plague with its ghastly mortality should be combated, not only surgically, but that a definite sanitary campaign should also be carried on against it.

Amid much which is most gratifying, the successful removal of disease, the restoration of sight, mitigation of pain and the saving of life, one factor still exists which contributes to failure and death. And that is the advanced period at which many patients are still brought to us. Over most of the surgical deaths in the hospital the words *too late* might be written large. Cases of intestinal obstruction are often in extremis when they arrive. No less than twelve of the deaths after operation were due to debility or cardiac failure. Others such as one of the cases of Cæsarean section were very septic on admission.

Where we are able to choose our own time, as for instance in large abdominal tumours, goitres, hernias,

gastro enterostomies and so on, the mortality is nil, and the total on all operations was $\frac{1}{2}$ per cent.

We are preparing and using autogenous vaccines to an increasing extent.

The measure of surgical success is no doubt due primarily to careful asepsis, rapidity of operation and careful selection, the result of many years' experience and of lessons learnt from failure."

A PARTICULARLY nasty account of hospital life in a county hospital in England is given by a person calling himself or herself George Tielawney in a "novel" called "*In a Cottage Hospital*". It professes to be based on an account given by an "unhappy young doctor," but we have no hesitation in saying that this story of drunken doctors, fascinating and finicky nurses, impossible operations, abortions, with a maudlin mation and a cheating secretary is an impossible exaggeration, and made all the more objectionable by the unctuousness of the preface.

THE ever energetic Liverpool School of Tropical Medicine is about to bring out another publication entitled *Annals of Tropical Sanitation*, to appear in quarterly volumes, annual subscription one guinea. It is to be edited by Sir Ronald Ross, KCB, FRS (IMS *retd*), Colonel W G King, CIE, IMS (*retd*), and Dr W J Simpson.

IN view of Captain W S Patton's recent important discovery of the complete development of the parasite of kala azar in the bed bug, it is interesting to note that in the *Kala Azar Bulletin*, No 1, Vol I (Dec 1911), there is a very full and complete résumé of the literature of the experiments on the transmission of kala azar by bloodsucking arthropods, and it is an indication of the work being done that this résumé runs to 14 pages and deals with the work of 17 writers in the past four years.

THE Tulane University has arranged to start a school of Tropical Medicine and Hygiene at New Orleans, and the opening of the Panama Canal makes the establishment of this school particularly opportune.

IN an article in *T P's Magazine* (Feb, p 589) praising, with photographs, the work of a well-known bonesetter in London, there is quoted a letter from "a medical man in India" in which it is stated that in 1911 he sent us a paper on some bonesetting case for publication, and threatened in case we and the *Lancet* "refuse to publish" it, he will send it to the "*Review of Reviews*". We would be sorry to deprive our enterprising lay contemporary of such valuable "copy," but all we need say is that we most certainly never remember having received any such article, so our "withers are unwrung."

MAJOR E D W GREIG, I.M.S., is placed on special duty under the New Medical Research Fund as a special cholera investigator. Apparently such officers will now work independently of the Central Research Institute. Cholera research is needed, but we would prefer to have seen, and we hope we will soon see, a strong body of research workers on dysentery, the most important and most ever-present disease in India.

Reviews

The Surgical and Medical History of the Naval War between Japan and Russia—1904-05, Tokyo, 1911 Tokyo Printing Co

THIS is a monumental work, giving a complete surgical and medical history of the naval part of the great war between Russia and Japan. It is published by the Bureau of Medical Officers, Navy Department, and consists of 790 large pages.

This huge work is in one large volume and is subdivided into books and chapters dealing with sanitary and medical administration, hospital ships, naval hospitals, sanitary (i.e., medical) conditions during the war, battles and injuries, handling of the killed and wounded, statistics of injuries and a brief history of many remarkable cases of injuries and wounds.

It is quite impossible for us adequately to review such a work, we can only say that it contains a mass of most valuable material for administrative medical officers who may have to lay down the medical arrangements for any future naval war.

The work reflects the greatest credit on the medical staff of the Japanese navy, and it must prove of great value to administrators in the navies of all other countries.

Entomology for Medical Officers—By A ALCOCK, CIE, MB, LL.D., FR.S., I.M.S., 18th Edition. Published by Gurney & Jackson. Pp 347, Illustrations 136

THIS book has been written in response to repeated requests from members of the author's class at the London School of Tropical Medicine, and its aim is to provide within a convenient compass a general account of those arthropods with which the medical officer in tropical climates is concerned. It goes without saying that, coming from the pen it does, the book fulfils its aim. But it does more than this, it compresses into an extraordinarily small compass, an enormous amount of information. The language is a model of conciseness with the occasional diversion of a gentle gibe, or humorous reference, which attracts the attention to the point requiring emphasis, and which is all the pleasanter in that it is not what most people associate with the subject of arthropod-

ology. It is impossible, within the limits of a review to give any idea of the full extent of the contents of the book, but some slight idea of this may perhaps be obtained from the fact that the arthropoda described and pictured, comprise all human parasites and carriers, those which sting, bite or otherwise annoy man, those which are detrimental to his food, tobacco, or dwellings, and those which are intermediate hosts of his parasites, or which prey upon arthropoda injurious to him. In classification the author brings a wide zoological knowledge to bear on the branch of the subject in which he is now most interested. He insists that the principle which must underlie a classification is that it shall "knit together the morphological bonds which should unite diversely modified relatives," and he deprecates the overrating of characters which, though in a way striking, are, from a broad zoological standpoint, trivial. For example, the *Culicidae* are divided into 2 sub-families, (i) *Corethrinae* with 4 genera, *Monochlorus*, *Belonemphes*, *Corethra*, & *Corethrella*, & (ii) *Culicinae* with 4 sections *Megalomorphini*, *Epiplatini*, *Culicini*, & *Metanototricha*. The section *Epiplatini* contains 1 genus, *Anopheles*, with 7 subgenera or 12 series. Of the 136 illustrations, which add so greatly to the value of the book, all but 2 or 3 are original. It is quite certain that of those who pass through the London School of Tropical Medicine, few will fail to possess themselves of the book, and many old students will do the same. Our advice to those about to take the course is to get the book beforehand, and by studying it to get at least a general idea of the subject, and so mitigate to some extent the mental indigestion which is apt to result from the enormous amount of mental food which has to be assimilated during the course. Colonel Alcock has produced a book most useful to medical men practising in the tropics, and they are sure to show their appreciation in the usual manner.

Epidemic Dropsy in Calcutta—By Major E D W GREIG, M.D., D.Sc., I.M.S. Scientific Memoir No 49, 1912. Price Re 18

THIS Memoir is a continuation of that by Major Greig, of the same name, numbered 45.

It gives a complete history of the recent outbreak of epidemic dropsy in Calcutta, but does not contain much that is new on that subject. There is a valuable note on the outbreak resembling beri-beri which took place in the Basti Jail in 1910, but we do not learn if the disease was beri-beri or epidemic dropsy. At any rate, the diet was a good mixed one, containing wheat and *dal* and for some time rice. There does not seem to be any phosphorous deficiency in such a diet.

There is also an account of an outbreak of "ship beri-beri" and a valuable résumé of the subject of epidemic dropsy or scurvy.

The admirable work of Schaumann which in a recent issue we have quoted is freely made use of and much experimental work is detailed. We note that the scare as to the connection between beri-beri or epidemic dropsy and mustard oil is dismissed as baseless. We cannot find any opinion as to the identity or otherwise of beri-beri and epidemic dropsy. Are they one and the same disease? We think not. It is a pity that an officer has not been deputed to the Far East to study the real beri-beri. Men who have seen plenty of beri-beri in Hongkong and Singapore, etc., will not admit that the diseases are identical. They have certain symptoms in common, but we do not believe that they are identical.

Much has recently been written on the subject of these dietetic diseases, but we cannot say that we know enough about them for practical use.

The House Surgeon's Vade Mecum—By RUSSELL HOWARD, F.R.C.S. Illustrated. London: Edward Arnold, 1911. 7s 6d net.

OF the many books of this class that we have seen, this Vade Mecum of Dr. Russell Howard is one of the best. It is admirably devised for the use of Resident Medical Officers and indeed to many Practitioners. It is handy, just 500 pages, well printed and well turned out. The amount of the information given is enormous and is divided into 23 chapters with a useful appendix.

The following are the headings of some of the chapters, and this enumeration will give our readers some idea of the contents and value of the book: a sepsis, wounds, shock, hæmorrhage, amputations, abdominal operations, hernia, injuries, etc., of lungs, etc., of tongue, of head, surgery of the eye, sprains, dislocations, inflammation of joints, fractures, bandages, injuries, etc., of urinary passages, rectum, and an excellent chapter on anaesthetics.

It is a useful book, which can be with confidence recommended to medical men in charge of hospitals and dispensaries.

The Parasitic Amœbæ of Man—By CHARLES F. CRAIG, M.D., Captain, Medical Corps, United States Army. Published by J. B. Lippincott Company. Price 10/6 net. Pp. 253, Figs. 30.

THE term "amœba" occurring in the title of this book is used deliberately in a loose and not in a scientific sense, for none of the *Amœbina* parasitic in man belong to the genus *Amœba*, this being restricted to free-living species having a contractile vacuole. In none of the parasitic species is the vacuole contractile. These latter fall at present into 2 genera: *Entamoeba*, having no flagellate stage, and *Paramoeba* possessing such a stage.

Numerous entamoebæ have been described, but at the present time only 3 can be accorded specific rank, for it is only in the case of these 3 that the life-histories have been worked out, and

at the present time the life-history is looked on by protozoologists as the most important point in the separation of the species of these animals. In 1903 Schaudinn did this work for *Entamoeba coli* and for *Entamoeba histolytica*, and demonstrated in his own person the harmlessness of the former, and the pathogenic character of the second, indeed, he probably proved the point at the expense of his own life. In 1907 Viereck worked out the life-history of a third member of the genus, *Entamoeba tetragena*. The salient characteristics of these 3 species are as follows—

E. coli is, when alive, sluggish, the ectoplasm rarely distinguishable from the endoplasm, the nucleus distinct, a vacuole and ingested red corpuscles rare. With Wright's stain the ectoplasm is light blue, the endoplasm dark blue. Reproduction is by simple division, by schizogony, the nucleus dividing into 8 parts and the cytoplasm collecting round these to produce 8 daughter amœbæ, by a process which is not quite correctly described in the book, but which is virtually self fertilisation after the extrusion of 2 polar bodies, and the formation of a cyst containing 8 nuclei and in which 8 daughter cysts develop outside the body, and lastly, by conjugation. It may be present for months and years in healthy persons who remain free from dysentery, and it has been fed to and injected into the bowels of animals without producing disease in them.

E. histolytica, when alive, is actively motile, the ectoplasm is distinctly divided from the endoplasm, the nucleus is distinguishable with difficulty, one or more vacuoles and some ingested red corpuscles are generally present. With Wright's stain the ectoplasm stains deep blue, the endoplasm dimly. Reproduction is by simple division, by gemmation, by exogenous formation of spores which at once encyst, and probably by conjugation. Its causal relationship to dysentery is based on characteristic lesions found only in association with this species of amœba, by the presence of amœbæ in that form of hepatic abscess which complicates amœbic dysentery, and by the production of the characteristic lesions on feeding the amœbæ to susceptible animals. The first intestinal lesion is a small red submucous nodule containing a viscid yellowish fluid composed of disintegrated cells, mucus, and active amœbæ. The amœbæ spread in the submucous layer causing necrosis of the mucous membrane overlying the nodule, and the formation of numerous submucous sinuses filled with the viscid matter just noted. In cases dying from the dysentery, abscess of the liver has been found in from 20 to 80 per cent and in over 50 per cent of these fatal cases there were multiple abscesses. In Craig's experience over 30 per cent of liver abscesses rupture externally, 40 per cent are infected with bacteria. In the early stages of amœbic dysentery the reproduction of the amœbæ is vegetative and at that stage animal experiments show that the disease is not infective. Healing, how-

ever, is synchronous with reproduction by spore formation, and the disease is then highly infective.

E. tetragena with a probably wide tropical distribution is in several respects intermediate between the other two forms. It resembles *E. coli* in that the nucleus is sharply distinct, and that the method of reproduction is the same, except that in the cyst 4 daughter amoebæ are formed instead of 8. On the other hand, it resembles *E. histolytica* in having similar pseudopodia, being very motile, phagocytic for red corpuscles, and in being pathogenic, though, as regards cats this disappears after a variable number of passages. The lesions caused in animals are identical with those caused by *E. histolytica*. In human beings dysentery is present clinically, but no *post-mortem* examination seems to have been yet made. *E. tetragena* differs from both *E. coli* and *E. histolytica*, in that there is no visible difference between the ectoplasm and endoplasm with Wright's stain, and that vacuoles are not so constantly present as in the latter.

There remain the doubtful species including those whose life-histories have not been worked out. *E. minuta* resembles *E. tetragena* in morphology, and in reproduction, except that schizogony has not been described for this form, its distinguishing point is said to be its small size, a doubtful one, and it requires confirmation. *E. nipponica* resembles both *E. histolytica* and *E. tetragena*, and it is possible that certain stages of both of these have been mixed up. It is therefore a doubtful species. *E. tropicalis* is said to be a harmless commensal which takes the place of *E. coli* in the tropics, and to be distinguishable from the latter by having from 3 to 13 daughter nuclei, and by living in cultivation with certain bacteria. *E. phagocytorides* has been described in one case of dysentery, its small size, marked ectoplasm, and the ease with which it can be cultivated in symbiosis with certain bacteria are said to be its characteristics. *E. undulans* seen once, and having an undulating membrane is unconfirmed. Of entamoebæ of other parts only *E. buccalis* is probably a separate species. It occurs in the mouth all over the world. With it are probably identical *E. gingivalis* and *E. dentalis*. In the urinary tract *E. urogenitalis* is probably identical with *E. histolytica* or *E. tetragena*. *E. murai* described from exudations was possibly only cells of the exudate. *E. karulis* found in an abscess and *E. pulmonalis* are probably aberrant *E. histolytica*.

One other parasitic amoeba remains for notice, *Paramoeba hominis*. The genus was constituted by Schaudinn for a water amoeba in which a flagellate alternated with an amoebic stage. Craig in 1906 found in the Philippines an intestinal parasite having an amoebic stage, an encysted stage, and on the rupture of the cyst there emerged flagellate organisms which reproduced by longitudinal fission, and after

several such generations passed back into the amoebic stage. In man it is associated with a chronic diarrhoea alternating with constipation, it has not proved infective for animals. Besides the descriptions to which brief reference has been here made, there are chapters on nomenclature, cultivation, technique which is particularly valuable, a bibliography and an index of authors. To the ordinary practitioner in the tropics the book forms a valuable statement of the present position of knowledge, while to anyone who wishes to undertake any investigations on amoebæ, its possession will undoubtedly prove a great saving of time and labour. The illustrations are good and numerous.

The Prevention of Dental Caries and Oral Sepsis—By H. P. PICKERILL, M.D., Ch.B., M.D.S. (Birm.), L.D.S. (Eng.). Messrs. Brillière, Tindall and Cox, demy 8vo. Pp. xvi + 308 with 57 original illustrations. 7s. 6d. net.

THE general plan of the work as stated in the introduction has been " .. to inquire into the past methods of the preventive treatment of dental caries, to compare these with present methods, and to collect data as to the incidence of caries in various nations and in various stages of civilisation. A critical examination of the powers of passive resistance on the part of the teeth has been carried out, together with an investigation of the forces of active natural protection, and a consideration of the means whereby both passive and active resistance might be fortified. " ending up with conclusions as to remedial measures based on these observations. The author concludes from his experiments that destruction of the enamel is due chiefly to the action of lactic acid produced by the fermentation of carbohydrate debris by acid-forming bacteria. The forces of natural protection against these two factors lie chiefly in the oral secretions, most important of all, in the author's view, is the extent to which diet influences the composition of saliva, and it is in this direction that the author sees the possibility of preventing and curing dental caries.

There are many items of medical and surgical interest in this volume but space prevents us giving more than a few.

We note that the much-abused dummy teat is admitted to have several advantages and in the author's pattern to be beneficial.

Contrary to the rhinologists' teaching adenoids are the result and not the cause of the associated contracted jaws and narrowed nasal cavities.

The function of ptyalin in the saliva has long been a puzzle to physiologists. Owing to its rapid destruction by acids, its action on starch with a view to preparing it for intestinal absorption seemed a negligible quantity, even though Grützner has shown its action may continue for some time in the stomach. The author claims that its real function lies as might be expected in the mouth, and that it is there to

convert the carbohydrate debris which adheres to the teeth into a soluble and easily removable maltose

On the important question of dentifrices the author has very decided opinions and unhesitatingly condemns the present day tooth powders which have chalk as a basis. Owing to their action on the composition and flow of saliva they are actively harmful and for the same reason antiseptic mouth washes are useless. From the public health point of view the author has some interesting observations on the influence of properly adjusted taxation on the general dietary of the masses and his remarks are well worthy of perusal by enthusiastic free fooders.

Finally, it is of interest to note that the "hois d'œuvre" before, and dessert after dinner have such a sound physiological basis that they should be introduced at all meals.

Throughout the book is full of original ideas thoroughly worked out, and a refreshing breaking away from empiricism and tradition.

A Manual of Diseases of Infants and Children—By JOHN RUHRAH, M.D. Third Edition, revised. Illustrated. W. B. Saunders Co. 1911.

THIS is eminently a book for the Medical student. As our author says, a student in his third or fourth year has about 15 different subjects to study and has no time to tackle huge books of 1,000 pages on each subject.

The present volume is eminently practical and will certainly be useful to the student and also serve as a reference book to the younger practitioner. The chapter on infant feeding is especially full and complete. The book is admirably illustrated and beautifully printed and bound. It can confidently be recommended to medical students.

A Manual of Pathology—By GUTHRIE MCCONNELL, M.D. Illustrated. Second Revised Edition. W. B. Saunders Co. 1911.

THIS is another of the admirable and elegant Manuals for Students, published by Messrs W. B. Saunders Company.

The first edition was well received and proved to be well adapted to the need of students, and took the place of more voluminous books on pathology.

It certainly in its new edition contains all the elements of pathology. The chapters on tumors, syphilis, malaria and ductless glands has been thoroughly revised. The illustrations are excellent and the printing and get-up such as we now expect from the well-known firm of W. B. Saunders Co.

We can strongly recommend this Students' Manual.

Eyes Right (Papers for Teachers and Parents)—By J. M. MACPHAIL, M.D. Sonthal Mission Press, 1912. Price, As S.

THIS is really an excellent and useful little book, written by Rev J. M. Macphail, M.D., a

well-known Missionary and a Surgeon whose work we have before this chronicled in our columns.

It is intended to make known as widely as possible the simple measures necessary for the prevention of eye diseases and the preservation of eyesight. They have already appeared in the publication called *Indian Education*, but are well deserving of a separate existence.

The section of the lighting of school rooms is very good and simple and the instruction given about ordinary diseases is simple and clear. There is a useful chapter on cataract, and Dr. Macphail, we are glad to say, denounces the dangerous *raval* or *band*.

Label Book—By Sub Asst Surgeon K. S. AGNIHOTRI. Second Edition, 1912. Indian Printing Works, Bombay. Rs. 2.

THIS is a most useful book of the labels of drugs, all clearly printed (with dosage) and in alphabetical order. The labels are printed so as to fit accurately on round bottles and in various sizes to fit large and small bottles.

We have often seen these in use and we can strongly recommend this collection of drug labels to all medical officers who wish to keep their dispensaries neat and tidy. Many blank labels are added.

It is obtainable from the compiler, Sub-Asst Surgeon K. S. Agnihotri, Panhala, Kolhapur State.

The Tightening of Loose Teeth. Some Technical Innovations—By Surgeon Dentist WITKOWSKI (Berlin). Translated by EDGAR NEUMANN, M.D., and W. M. GABRIEL, M.R.C.S., L.D.S. (Eng.) Messrs Bailière, Tindall & Cox. London, 1912.

WE have read this little work with the greatest interest and profit. The great cause of loose teeth is accumulation of tartar with a subsequent pyorrhoea alveolaris, and any method by which successful treatment of this condition can be obtained is sure of a warm welcome. We are not qualified to judge of the value of the methods advocated very warmly by the authors, but they appear rational and are worthy of a trial by scientific dental surgeons. The importance of the whole subject is becoming more and more recognised daily and there is little doubt that in the near future the skilled physician's first duty in the treatment of large numbers of diseases will be to call in the assistance of the dentist. How far ordinary dental measures are to be relied on in the treatment of pyorrhoea and its causes is another matter, but the evidence does not seem wanting that before long the scientific treatment of the condition will be taken out of the realm of dental surgery and become a part of the work of the vaccine therapist.

Operative Obstetrics including the Surgery of the Newborn—By EDWARD P. DAVIS, Professor of Obstetrics, Jefferson Medical College. Publishers W B Saunders Company

THIS book is a valuable addition to the small number of works on this important branch of surgery.

It is comprehensive, of convenient size, the type is large and the illustrations particularly clear. There is no unnecessary "padding" in this book, the writer is pleasantly concise in his descriptions of operations and the indications for operation.

The reference to the asepsis of the birth canal is short and to the point, while that on lumbar anaesthesia shows that its use is very limited.

The Chapters on Ectopic Gestation, Symphysiotomy and Pubiotomy, Vaginal Caesarean Section and Caesarean Section are excellent and practical.

The writer is to be congratulated on the production of an excellent work.

The Chemistry of Bread Making—By JAMES GRANT, MSc, TECH, FIC, FCS. With plates. Edward Arnold, London, 1912.

So far as we are aware the application of the science of chemistry to the bread-making industry has so far not been the theme of any important handbook. The present volume therefore is sure of a warm welcome as it undoubtedly fills a gap in the literature of this subject. The contents touch on all the co-related subjects of chemistry, physics, mechanics, biology and botany. It is doubtful whether the average standard of education is sufficiently high amongst those connected with the industry of bread-making to enable a thorough grasp to be taken of the principles involved or an intelligent appreciation of the mass of facts the book contains to be shown. A great deal of information on the composition of the cereals, milling, meals, flour, salts and extracts is included, and chapters are devoted to the use of ferments, bread-making processes, antisepsis of the bake-house, and fuel and ovens. To those interested in the industry this volume should be very useful as it presents in a compact form practically all that is known with regard to the principles involved. A useful bibliography and index are added.

The Care of Infants and Young Children—By A. DINGWALL FORDYCE, MD, FRCP (Ed). Thirty-six Illustrations. Messrs E & S Livingstone, Edinburgh, 1911.

THIS little volume contains the lectures, expanded to some extent, delivered to a medical class in connection with the Christian workers' training institute. There are nine lectures in all which deal in simple language with the different factors in the care and up-bringing of the infant and child. Mothers, nurses, health-visitors and medical students will find it a most valuable source of information in acquiring an

intelligent perception of the elementary principles of the care of the infant.

The book is pleasantly written, its meaning easily understood and its language simple. The profuse illustrations enhance its value very considerably and will be found very useful in combination with the text matter. We can heartily recommend these lectures to all mothers, nurses, etc., who are interested in the care of children, and who wish to be in a position to give them best to the proper up-bringing of the young.

ANNUAL REPORTS

THE SUPPLEMENT TO THE SANITARY COMMISSIONER'S REPORT, E B & A

THIS is the second Supplement to the reports of the Sanitary Commissioner of the vanished Province of Eastern Bengal and Assam, and we are strongly of opinion that the belated publication in this manner of such useful and important papers is neither fair to the writers nor useful to the public.

The following papers are given in this Supplement, and our readers can see that had they been published when new and fresh in our columns, they would have been read with great interest—

Report on an outbreak of *kala azar* in the Golaghat subdivision of the Sibsagar district, by Major S R Christopher, I M S.

2. Note on the treatment of leprosy with Naxin B in Eastern Bengal and Assam, during 1909-1910, by Colonel R Neil Campbell, I M S, Inspector General of Civil Hospitals.

3. Report on some experiments regarding the disposal of the sewage of Dacca City, by Captain C A Gourlay, I M S.

4. Note on the verification of vital statistics, by Captain C A Gourlay, I M S.

5. An account of the occurrence of Epidemic Dropsy in Habiganj subdivision, Sylhet, by Assistant Surgeon H Lyngdoh.

6. Report on an outbreak of Epidemic Dropsy at Faridpur, by Captain T C McCombie Young, I M S.

7. Note on Epidemic Malaria in the Rajshahi Division, during 1905-1909, by Captain T C McCombie Young, I M S.

Major S R Christopher's reports on his investigation of the outbreak of *kala-azar* in the Golaghat sub-division of the Sibsagar District, the existence of which was discovered by Capt Moulton, I M S, and Capt McC Young, I M S.

Major Christopher reported as follows—

We have seen that the disease in Golaghat occurs in foci, and that elsewhere in the sub-division if the disease exists it is as stray cases, often difficult to diagnose short of splenic puncture. That the foci are the result of the introduction of the disease from outside the district seems, in the case of those actually investigated, fairly clear.

How many such foci at present exist and to what extent, if any, the disease occurs sporadically beyond these can only be determined by an actual medical survey of the area. We are concerned at present more with the significance of such foci in regard to epidemic *kala azar*. The disease was present in Khumtai at least

ten years ago By 1908 it had affected most of the families living in the old village At the present time it is still very prevalent At Habichoa it has so far apparently confined itself to a few families, and it is doubtful whether it is more prevalent than it was some years ago At Mussalmangaon there is now no trace of the disease, nor does it seem likely in view of the many enquiries made that more remains of this evidently severe outbreak than the small Dumjooia focus

Taken as a whole, there has evidently been no great tendency for the disease to advance in the ten years or so since its probable introduction There is a tendency too shown in some of the histories for infection to die out We must, however, always bear in mind the peculiar feature exhibited by *kala azar* in its progress in Assam, *ie*, that whilst it in time disappeared from affected areas, it still spread actively elsewhere The disappearance of an outbreak such as occurred at Mussalmangaon may only be that in the course of the disease infection is kept going by the formation of secondary foci rather than by a direct spread of the original focus If this were so, the introduction of infection here and there throughout the area may lead to more and more foci being formed, and though each may in its turn die out, there may come a time if conditions are favourable when general epidemic conditions may supervene Though then there is no indication at present of the appearance of a general *kala azar* epidemic, yet so long as foci exist, it is impossible to say when the disease may not assume active epidemic form It would certainly be unwise to rely, in our ignorance as to the transmission of the disease, upon conditions possibly not being so favourable to the spread of *kala azar* in Sibsaga and Lakhimpur as in Nowgong

Colonel R Neil Campbell has a valuable note on the treatment of leprosy cases by Nartin B, and from it we quote the following extract —

Both nodular and nerve leprosy were selected for treatment, the only rejections being those suffering from Bright's disease or affections of internal organs, or severe leprosy cases with profound anemia or with existing ophthalmia Many of the cases were mixed nodular and nerve leprosy

The hypodermic injections were made into the subcutaneous fatty tissues of the arms, thighs and infraclavicular regions The site selected was carefully prepared, an all glass hypodermic syringe with platinum needle was used The syringe and needles are kept in ether and are made absolutely dry before use The needle is sterilized by passing it through the flame of a spirit lamp after each injection When finished giving injections, the syringe and needle should be thoroughly cleaned, then sterilized in boiling water and kept completely immersed in ether in a wide mouthed stoppered bottle so that it is ready for use at any time Any neglect in keeping the syringe and needle perfectly clean and absolutely dry is apt to give rise to indurations and abscesses The amount of injection was 1 cc except in cases where there was much weakness when half this quantity was used

All the patients, who have been under treatment, like it and say it has done them much good, that they feel stronger and lighter, have better appetites, sleep better and are generally fitter They are unanimously of opinion that they are much benefited, as the acute gnawing pains, numbness and tingling disappeared very rapidly, which naturally permitted undisturbed sleep and better general health The local effects are merely a transitory burning pain In no case has there been any increase of the disease, nor have any fresh lesions developed In one case there was dimness of vision In most cases the improvement has been marked

The following signs were observed —

1 Local reaction in six patients—

(a) redness and swelling of lepromata and leprosy tissues,

- (b) thickening of the legs and hands (especially of the dorsal aspect) with ulceration of the nodules which gradually subsided,
- (c) affection of the eye,
- (d) in two anæsthetic cases, nerve leprosy, trophic changes of the nature of blisters appeared which gradually subsided not to return

Scrapings from the nasal mucous membrane of three cases showed under microscopic examination, in two no bacilli could be detected, and in one the bacilli were few and in a state of degeneration

Capt C Goulay has a good technical article on Dacca sewage, which does not however admit of abstraction here

Asst Surgeon Lyngdoh's paper on epidemic dropsy cases in Sylhet might well have been more usefully published a couple of years ago, and the same remark applies to the useful report by Capt McC Young, I M S, on cases at Faridpur We make the following extracts —

Asst Surgeon Lyngdoh wrote as follows —

"It has been shown above that this disease affects all castes alike and the sexes almost equally

I could not attribute the cause to any food-stuff Diet has been the usual ordinary food they are used to taking The rice used was a local country rice, cured and uncured, etc Nitrogen starvation is out of the question, as all the patients take sufficient quantity of dals and fresh fish and the majority of the cases (who are Muhammadans and Christians) take also meat (especially fowl) No Burma rice was used Plenty of new local country rice is available this season in this district

"It appears from this epidemic, and so far as information and observation could be gathered regarding this disease, that epidemic dropsy is a specific infectious disease It seems to be conveyed from person to person The epidemic character of the disease, its initial diarrhoea and fever, the local or house infectiousness, and the sudden disappearance of the disease when infected houses are vacated—all give ground to suspect that it may be a bacterial disease

"The first case occurred in the Police compound or group I A girl, as already described above, appears to have carried the infection from group I to group II The X'mas Tree of 24th December 1909 at the Mission House appears to have carried the infection (by persons) from group II to group IV The enquiry on the infection of group III was not successful at all

"The incubation period appeared to be from 5 to 15 days'

Capt McC Young, I M S, wrote —

"Thus Burma rice, water supplies, site infections, and intermediate hosts do not appear to be probable explanations of the mode of infection

"The nitrogen starvation theory of the somewhat similar disease of beri beri is untenable with regard to an outbreak of a disease in a district where fish is cheap and used in every house

"On the other hand, there is a certain amount of evidence, of a rather indefinite character, which seems to point to some connection with food, while many of the facts which I have observed may also indicate that the disease is contagious from one person to another In considering the theory of infection, one is met with what at first appears to be a difficulty, namely, that, at a time when no new cases are occurring, many people are going about with slightly swollen legs who are not infective The difficulty is explainable on the hypothesis that the disease, if infective, is only so in the early stages, and that possibly the oedema and cardiac condition are late symptoms, perhaps sequelæ more than symptoms, analogous to the post diphtheritic paralysis of diphtheria or

post dysenteric 'peripheral' neuritis. One is at once reminded of the almost universal initial, and occasionally concomitant, symptom, of diarrhoea or dysentery. But if the dropsical symptoms are merely sequelae, it is a reasonable hypothesis, supported by the analogy of diphtheria, to suppose that not all cases of diarrhoea will be followed by this symptom which may also show all degrees of severity not in proportion to the severity of the casual disease. The further one pushes one's investigations, the more cases of trivial leg oedemas causing little or no inconvenience come to light.

"If my surmise is correct, the appearance of cases of dropsy ought to be preceded by a considerable number of cases of diarrhoea and dysenteries in the affected community.

"With the object of throwing some light upon this hypothesis, I have examined the number of cases of diarrhoea and dysentery under treatment in the outpatient department of Fairpuri dispensary, in relation to the total number of cases treated during November, December, January, and March, for the last six years and show the result in curves plotted out upon a diagram. It will be seen that the curves for 1905-1906, 1907-1908 and 1908-1909 show a general tendency to fall during December and January, to be maintained about the same level or to rise in February. 1906-1907 was an abnormal year, in which diarrhoea and dysenteries were maintained at a high figure throughout the four months in Fairpuri.

"The curve for 1909-1910 shows a variation from the preceding curves such as would be shown if to the average per month of the preceding periods, an unusual outbreak of diarrhoea and dysenteries had added its number to the figure for December. From this it will be seen that there are some grounds for supposing that there was an abnormal number of cases of diarrhoea and dysentery during December, which was the month preceding the period in which the cases of dropsy were noticed.

"From the foregoing considerations, I think it probable that the disorder is an infectious one, perhaps transmitted from one to another through food, contaminated through handling by the infectious poison, in the same manner as food is rendered infective by an enteric carrier or that it may possibly be contagious like the specific fevers of Europe, that its infectious period is short and that the mechanism of the disease may be that the dropsy is due to the absorption of a toxin, the site of whose production is the intestine as the diarrhoeic and dysenteric symptoms suggest."

It will be seen that the reports from which we have made the above extracts are too good to be buried in a belated Supplement to an Annual Report.

Correspondence

COWDUNG AND DOMESTIC HYGIENE

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In the Annotation column of the *Lancet* of the 30th September last (page 958), and in the column on Notes short comments, etc., of the same Journal for the 21st October last (page 1,175), there are some remarks on cowdung floor (washing) and plague prevention. Dr Saldanha who writes in the latter column makes very strange statements indeed in favour of his "Cowdung Washing and Plague Prevention," and lays particular stress upon the point that in order to keep (a cowdung floor) clean and habitable, it requires to be frequently cowdung washed. He seems to be a very zealous advocate of this mode of treating the house floors, and goes so far to state that the Punjab and North Western Provinces remain plague stricken, for they neglect to carry out this useful "domestic hygiene."

The arguments he sets forth in favour of his advocacy are rather strange and not so easily believable. Firstly he states that in this cowdung treatment of floors there is a

slight chemical action upon the organisms which may be present on the floors, and secondly, there is mechanical effect to entangle in the liquid (mucilage) dung and thus destroy any fleas or "flea eggs." Though the second reasoning appears to be more reasonable, I don't know how the first can be carried out, for I am not aware of cowdung having such a bactericidal chemical action. Probably some chemical action may be setting in when the cowdung gets decomposed owing to its remaining in that condition for a longer period, but it is very wrong therefore to attribute to it any bactericidal value.

Dr Saldanha seems to make the most of his cowdung affair. He does agree with the fact that the cowdung often contains the tubercle bacilli, and therefore states that "sunlight and free ventilation which are necessary for drying a cowdunged room also destroy any tubercle bacilli that may be present in the cowdung used in washing the room." While preparing the cowdung for the wash, the housewife has to handle freely this objectionable filth. To this process she is subjected to nearly once or twice daily. Will not the tubercle bacilli which are mostly present in the cowdung affect her in any way after so much handling?

Dr J. A. Tanner, the Health Officer of the Bombay Municipality, who carried out some valuable investigations last year, as to the prevalence of tuberculosis in the cattle, states that "out of two hundred and eight samples of milk examined, thirty contained an acid fast bacilli resembling the tubercle bacilli, or 14.4 per cent." Further on in the summary of his investigations he states, "(3) that a possible source of infection (of tuberculosis) is the faeces of the infected cattle due to the intimate connection there is between the labouring classes and the cattle and the enormous use made of cowdung in the houses and surroundings." The figures I have given show that the mortality from tuberculosis is higher in India than in England, that the milk and spina (road side) examined show that there is risk of disseminating the tubercle bacilli while the presence of the tubercle bacillus in the faeces of the infected animals is a greater danger in India than in other countries. The generalities of the public here have no chance of distinguishing between the infected and non-infected cattle, so they use the dung of all the cattle. Thus they stand a greater chance of catching the infection. This is the case of one particular bacillus often found in the cowdung but as the cow is one of the highly developed vertebrates, its excreta must contain an abundant infectious flora of Prof. Metchnikoff to frequently or freely handle, which must be a constant source of menace to general good health.

There are two ways in which the cowdung is used for the Indian house floors. (1) as a thick paste, (2) as a watery solution. In either case it is mixed with some other substance usually the yellow or the black earth (pill or kalmati) and the mucilaginous character of the cowdung to which Dr Saldanha refers is chiefly due to this addition. In fact, it is mainly added to give the cowdung a mucilaginous character, otherwise the paste will not keep even and lasting. There is no mucilage in cowdung itself as Dr Saldanha believes, except that it may at times be accompanied with mucus from the large intestines. The first system of cowdunging is carried out at longer intervals, sometimes months and even years, and as it is carried out in a thick layer it remains more porous, and after drying cracks appear in the whole floor. These cracks have been frequently observed by me to harbour a number of fleas, so also the porous nature of the floor, I believe, must offer a good resting place for many other harmful organisms.

The second process of using the cowdung in a liquid mixture to which I think Dr Saldanha gives the name of "cowdung washing" is generally carried out almost daily in our kitchens and sometimes in our out houses. The cooking hearth and the places where dishes are served for the meals are the places often frequented with this plan of treatment. The most peculiar thing about this process is that the lady of the house will be very particular to preserve the same rag for her every day use. So also the pretence of earthen pot. Will Dr Saldanha reflect what amount of danger the housewife daily faces by her frequent and free use of the rag and the earthen pot, which are merely the filth incarnate?

In every way considered, I am also "of the opinion that as a plague preventive this use of cowdung had nothing to commend it," but on the other hand, it is positively dangerous to make use of this filth as a household article, and as such every step should be taken to discontinue its use. I fully agree with the statement that "cleanliness of the persons and of house interiors with admission of sunlight and fresh air will do more to prevent plague in Hindu huts than the spreading of cowdung on the floors."

I have been thinking for a very long time how best to discontinue the use of cowdung by suggesting an equally cheap substitute for it. The treatment of our floors with a weak solution of potassium or phenyle or such other cheap antiseptic will be the best thing, but I do not think it will be utilized by or be within the means of all. The

construction of the house floors will also be another difficult question to deal with, in this connection. The even cement flooring will be the best thing needed, but I do not think it will be within the means of all here. I would suggest a mixture of coal tar and concrete. The tar should be heated till it assumes an uniform liquid consistence and then the concrete should be added to it. The whole mass, when it assumes a semi solid consistence, should be evenly spread on the floor. This will no doubt be the best substitute for the old crowding floor, but will this be the cheapest? Will any of your readers suggest a cheaper substitute for it, so also a cheap and effective disinfectant for washing the floors so that men of all grades may be able to make a constant use of them?

Yours, etc,
H B PANDIT,
Sub Asst Surgeon

BARODA

"THE GANJA HABIT"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I am enclosing a reprint of an article written in the *Therapeutic Gazette* (November 1910), and I am anxious to obtain what facts I can regarding the composition of Haschisch and what is known about the habit produced by the use of *Cannabis Indica* in a pure state. Any information or references that you can give me will be greatly appreciated.

Yours, etc
M V BALL

[Will some of our readers oblige DR BALL?—ED, I M G]

"THE VALUE OF POLYVALENT SERUM"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following account showing the efficacy and success of the Serum method of treatment, is,—by kind permission of Captain Grant, R A M C, Commanding Station Hospital, Bharno,—is sent for favour of publication. The patient, Captain Hodgkinson Luck, I M S., took ill on 14th February 1912, complaining of general malaise, sore throat and fever. He gave a previous history of a notable throat caused by excessive smoking, and he had operated on a gangrenous foot the day before. On 15th February 1912, Captain Grant was called in and found the patient with high fever and very bad throat, showing follicular tonsillitis on left side with a suspicious patch, greyish yellow in colour, between the anterior and posterior pillars of the fauces, extending up to wards the soft palate. He was given a good purge, Sod Salicyl mixture, and gargles of Pot Chlor. He had a bad night, experiencing considerable pain and difficulty in swallowing and his general condition was heavy and lethargic, due probably to absorption of toxins. Swabs from throat were taken and examined microscopically, showing presence of large numbers of *Streptococci*, but no *Diphtheria Bacilli*. On the 16th, the inflammation in the throat had extended to the right side, involving the uvula. On the left side a swelling appeared anterior to anterior pillars of the fauces which seemed to contain pus. Incision proved negative. Both sides were scarified and 2,000 units of antidiaphtheric serum given subcutaneously, locally fomentations and gargles were continued. On 17th February 1912, the patient appeared worse, he had passed another restless night, the throat looked angrier, and the submaxillary glands were swollen. The surrounding tissues were also hard and tense, pointing to a spreading cellulitis and he could with difficulty open his mouth and speech was only possible by painful effort. As his general condition also appeared worse Captain Grant decided to bring him into hospital and incise freely under chloroform. This was done and swabs from throat taken and sent to the Divisional Laboratory, Maymyo, with the same result as that on the previous occasion. The incision did not apparently give any relief. He had another very restless night. Deglutition was accomplished only after great difficulty and the jaw appeared fixed, allowing the mouth to be opened to a very small extent.

The next day 19th February 1912, his condition was if any thing worse. Polyvalent serum which had been wired for on 17th February 1912, now most opportunely arrived, thanks to the kind and prompt action of Major Dee, I M S., Civil Surgeon, Mandalay. The patient was given 10 c.c. at noon followed by another 10 c.c. that same evening. The effect was most marked. The temperature dropped to 99° the next morning, and there was a remarkable abatement of the severity of the condition. His throat felt a lot easier, the pain and swelling of the glands decreased, and he was able to take liquid nourishment with greater ease and comfort. He now made an uneventful recovery and left hospital two days later. This case and the complete success of the Polyvalent serum is best appreciated by a glance at the temperature. There can be no doubt that the Septic

throat was caused by the bacilli inhaled from the gangrenous foot during the operation, and further, these bacilli must have been of a most virulent type. The severity of the attack may be gauged from the fact that Phlebitis developed during convalescence, clearly the sequela of the septic infection. And although the disease had made great head way, and had a clear start, still the serum was able to catch it up and finally neutralise it. It would not be too sweeping therefore to conclude that all cases requiring serum treatment, should receive it, no matter in what stage, or how desperate the patient's condition may be. It is a drawback, of course, that one should not be able to determine, definitely, beforehand, the particular strain of Polyvalent required for any given septic infection. But then there is always the chance that one may strike the proper strain of the serum required, as exemplified in the foregoing case.

Yours faithfully,
C W DUNLOP,
Asst Surgeon

STATION HOSPITAL,
BHAMO
18 3 12

THERAPEUTIC NOTICES

MESSRS MACKENZIE LYALL & Co, Calcutta, the Agents for MELLIN'S FOOD Co for India, Ltd., send us a copy in Bengali of the firm's useful pamphlet on *Care of Infants in India*.

WE referred in our Editorial columns lately to the most recent views of the value of DIGALEN and in B M J (13th January) Dr Moore remarked as follows—

"Equivalent amounts of 'Digalen' solution produce as distinct and marked slowing as the tincture, and on listening to the heart the increased force is obvious in the short, sharp systole. It has the further advantage that it can be given intravenously without pain. The absence of alcohol is here a highly desirable factor, and the safe dose is at least twice that of the tincture."

Standardized preparation of DIGALEN are sold by the Hoffmann La Roche Chemical Works Ltd, London, and by agents in India.

VISITORS to London, this summer will be sure to find their way to the ANGLO LATIN EXHIBITION to be held at Shepherds Bush at the Great White City.

BOVIL, LD, announce a record year and as Sir J Crichton Blount has said

"Bovril rests its claim on the firm basis of exact chemical experiment, referring of course to Prof Thompson's well known experiments on the food value of Bovril."

A NEW system of electric deposition of metals has been invented by Messrs P & Q Maino. The process is controlled by the Harvey Electro Chemical Co., Ltd., London. By the new process practically every substance can be electroplated. For instance, the outside of a salad bowl or an earthen teapot can be coated with silver to an unlimited thickness while the inside will still be undisigned earthenware. The new process also admits of many alloys for the plating. For instance, silver and nickel can be successfully combined, silver and tin, silver and cadmium. Aluminium can also be plated with any electrically depositable metal as also on wood, paper, iron, steel, etc. The Company will be glad to forward prospectuses to any who are interested. Their address is Norfolk House, Laurence Pountney Hill, London, E C.

MESSRS KNOLL & Co send us a reprint of an article of the value of BROMIDIA in hospital practice for the *Ärm Therapeut Wochenblatt* 41 of 1911. The article is by Dr Goeschel, who has used it with very satisfactory results.

MESSRS BATTLE & Co, the makers of the well known preparation BROMIDIA, have been placed in a singular position owing to the peculiar business morality of Indian Chemists. On the label of every bottle of Bromidia is published the formula—consequently the preparation is widely imitated and when dispensed by the physician, spurious "Bromidia" is issued by some druggists. Messrs Battle & Co point out that "Bromidia" is a standardized preparation and if dispensed in the form issued from their laboratories can be relied on by the physician for the specific purpose prescribed. The use of a substitute not only renders the effect of the prescription uncertain, but may be fraught with peril to the patient. It is suggested that physicians should always write the word "Battle" when prescribing "Bromidia" to ensure the genuine drug being used.

Service Notes.

AN innovation appears in the April number of the Indian Army List *ie.*, the abolition of the designation Principal Medical Officer, His Majesty's Forces in India, and the substitution in its place of "Director of Medical Services." This new designation follows the home nomenclature, and is part of a series of changes in the Headquarters staff which have been in progress for some time past, thus, in the General Staff Branch we find a Director of Military Operations and a Director of Staff Duties and Training, in the Quarter Master General's Branch there are Directors of Supplies and Transport, of Arms and of Army Clothing, besides the D G, Army Remount Department, and in the Ordnance Branch in addition to the D G, there are Directors of Ordnance Factories, of Ordnance Stores and of Ordnance Inspection. The new designation brings the medical branch into line with the rest and in time no doubt we shall get accustomed to the substitution of "D M S" for "P M O."

In consequence of the change the "Deputy P M O" becomes "Deputy Director of Medical Services," and the two Secretaries (I M S and R A M C) and the Sanitary Officer Army Headquarters become 'Assistant Directors'.

In the new war organisation the same nomenclature is followed for the present, however no change has been made in the designation of divisional and brigade P M Os.

WE are glad to publish the following extract from a report by Lieutenant Colonel J A Douglas 39th Central India Horse, on the fighting near Kizilum on 24th and 26th December 1911—

'Captain McCowen pluckily got out to the wounded man twice and started tending him but was driven back under the tower each time by fire from the loopholes

I wish to bring to notice excellent work done by Captain McCowen I M S, who tended the wounded under fire very successfully."

LIEUTENANT COLONEL SIR RICHARD HAVELOCK CHARLES K O V O, Bengal Medical Service retired has been gazetted as G C V O on 13th February 1912 on the return of the King from India. This is only the second occasion on which the Grand Cross of any order of Knighthood has been bestowed upon a member of the Indian Medical Service, the first being the Civil G C B conferred upon Sir John McNeill of the Bombay Service, Ambassador to Persia, on 15th April 1839, more than seventy years ago.

BRIGADE SURGEON HENRY E BUSTEED, Madras Medical Service, retired, died in London on 1st February 1912. He was born on 4th December 1832 took the M D Queen's University Ireland, in 1854 and the M R C S in 1855, and entered the I M S as Assistant Surgeon on 4th August 1855, one of those who passed at the first competitive examination. He became Surgeon on 4th August 1867, Surgeon Major on 1st July 1873 and retired with a step of honorary rank on 1st June 1886. He served in the Mutiny and was present at the relief of Lucknow, the relief of Cawnpore and the operations against the Gwalior contingent, receiving the medal with a clasp. In 1861 he was appointed Civil Surgeon of Cuddalore and in 1865 joined the Madras Mint, long ago abolished, as Assistant Assay Master, and in that department he spent the rest of his service. Officers in the Assay Department were then considered ineligible for promotion beyond the rank of Surgeon Major which precluded his rising higher in the Service than he did. In 1870 he became Deputy Assay Master and in 1872 Assay Master of the Calcutta Mint and remained in Calcutta for sixteen years. He was the author of one of the best books written by any member of the I M S *Echoes of Old Calcutta* first published in 1882, with subsequent editions in 1888, 1897 and 1908, and of a pamphlet, *The Serampore Portrait, is it Madama Grand?* in which he proved that the picture is not one of that lady.

LIEUTENANT COLONEL BENJAMIN CURWFEN OLDHAM of the Bengal Medical Service died at Osborne Isle of Wight on 9th January 1912. He was born on 23d March 1865, educated at St Bartholomew's took the M R C S and L R C P London in 1888 and entered the I M S as Surgeon Captain on 28th July 1891, becoming Major on 28th July 1903, and Lieutenant Colonel on 28th July 1911. He served on the North West Frontier of India in the Mohmand Campaign of 1897-98 for which he had the medal and clasp. For the last thirteen years he had been in civil employ in Bengal, but had been in indifferent health for a long time, having had to take sick leave on several occasions. In 1905 he succeeded Lieutenant Colonel Whitwell as Civil Surgeon of Patna, and in 1910 came to the 24 Parganas.

LIEUTENANT COLONEL ROBERT ANDREW KING HOLMES, Bengal Medical Service, retired died in London on 28th January 1912. He was born on 16th September 1844, educated at Queen's College, Belfast, and in Dublin took the degrees of B A in 1866 and M B in 1870 at the Queen's University, Ireland and also the M R C S in 1871 and entered the I M S as Assistant Surgeon on 30th January 1872. He became Surgeon on 1st July 1873, Surgeon Major on 30th January 1884 and Surgeon Lieutenant Colonel on 30th January 1892, retiring on 20th March 1899. Most of his service was spent in the Jail Department in the N W P, now the United Provinces. The Army List assigns him no war service.

MAJOR M DICK I M S took over charge of his Civil medical duties at Meiktila District on 30th January 1912.

ON return from leave Captain J W McCoy, I M S, was placed on duty at Dacca under the Sanitary Commissioner.

WITH reference to Government Notification No 475, dated the 23rd January 1912, His Excellency the Governor of Bombay in Council is pleased to make the following appointments—

Major H Bennett, M B CM, BSc (Edin), F R C S (E) I M S to be Civil Surgeon Karachi.

Major R W Anthony, M B CM (Edin) F R C S (E) I M S, to be Civil Surgeon, Dhruwar.

Captain J L Latham M B, BCh (R U I), I M S, to act as Civil Surgeon, Belgium.

Captain H S Hutchison M B, I M S to act as Personal Assistant to the Surgeon General with the Government of Bombay.

MAJOR W O S MURPHY, M B BCh, I M S was granted privilege leave of absence for eight days with effect from the 15th December 1911 with permission to return to his leave the Christmas Holidays from the 23rd idem.

Government Notification No 7020, dated the 30th November 1911, is cancelled.

CAITAIN J H HORNE, I M S, is to be put on special malaria duty in Madras.

CAITAIN A W M HARVEY, to be in charge of the Brigade Laboratory, Dacca Dun with effect from 1st February 1912.

MAJOR S HUNT, Indian Medical Service in Agency Surgeon of the second class, on relinquishing his duties in Nepal, is placed on special duty under the orders of the Agent to the Governor General in Rajputana, until further orders.

LIEUTENANT G R LYNN Indian Medical Service is appointed to officiate in Agency Surgeon of the second class, and is posted as Residency Surgeon Hyderabad, with effect from the 1st January 1912 and until further orders.

THE services of Captain J H Horne, M B I M S, are placed temporarily at the disposal of the Government of Madras.

THE services of Captain H Watts, M B, I M S, Plague Medical Officer Punjab, are placed at the disposal of the Home Department.

THE services of Lieutenant Colonel B B Grayfoot, M B, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India with effect from the 22nd January 1912.

THE services of Captain I M Macrae M B, I M S, are placed permanently at the disposal of the Government of the United Provinces of Agra and Oudh, with effect from the 16th December 1911, for employment in the Jail Department.

THE services of Lieutenant Colonel A O Evans, I M S are replaced at the disposal of His Excellency the Commander in Chief in India for employment as P M O, Kohat.

THE services of Captain E T Harris, M B, I M S, are placed temporarily at the disposal of the Government of Burma.

CAPTAIN W W JEFFERSON M B, I M S, is appointed to officiate as Civil Surgeon, Simla (West), during the absence on leave of Lieutenant Colonel Dyer, M B F R C S I M S, or until further orders. The Home Department Notification No 1125, dated the 10th November 1911, is hereby cancelled.

MAJOR F A SMITH, Indian Medical Service (Bombay) an Agency Surgeon of the 2nd class is posted as Civil Surgeon, Peshawar, with effect from the 29th January 1912

THE promotion of Captain James William Barnett, M B to that rank, notified in the *London Gazette* of the 22nd August 1911, is antedated to the 1st February 1911

THE following Senior Assistant Surgeons with the honorary rank of Lieutenant are promoted to be Senior Assistant Surgeons with the honorary rank of Captain, dated 22nd November, 1911 —

Robert James Owen
Frederick Francis Bedell

And the following First Class Assistant Surgeons to be Senior Assistant Surgeons with the honorary rank of Lieutenant, dated 22nd November 1911 —

William James Corridon
Edward James Gieson

LIEUTENANT COLONEL W H B ROBINSON Indian Medical Service (Bengal), an Agency Surgeon of the 1st class, substantive *pro tempore* and Residency Surgeon and Chief Medical Officer in Rajputana, is appointed to hold charge of the current duties of the office of the Residency Surgeon, Western Rajputana States in addition to his other duties with effect from the 26th October 1911, and until further orders

THE following Lieutenants are promoted to be Captains, I M S with effect from 30th January 1912 —

Andrew Monro Jukes M D
Gwilym Gregory James M B
William David Keyworth, M B
John Howard Horne, M B
Alfred John Lee M B

The first commission of these officers is dated 30th January 1909

THE following promotions are made subject to His Majesty's approval Captains to be Majors I M S, with effect from 25th January 1912 —

James Diamond Gilham, M B
Cuthbert Allan Spradon M D
Maxwell Mackelvie M B F R C S E
William Henry Crilly M B
Walter Valentine Coppinger, M D, F R C S I
William Mitchell Houston M B
William David Acheson Keys, M D
Alexander Chalmeis, M B, F R C S I
Samuel Robert Godkin F R C S I

The first commissions of these officers is dated 25th June 1900, they therefore have received 6 months accelerated promotion, two officers of the batch have not yet qualified for accelerated promotion

MAJOR P C GABBETT, I M S, is due out from 2 years' leave on 26th August 1912

MAJOR T H FOULKES, I M S, is due out from furlough on 30th April 1912

MAJOR F F ELWIS C I E, I M S, recently Surgeon to the Governor of Madras, has been appointed Surgeon, Third District and Second Physician in the Madras General Hospital

MAJOR L E GILBERT, I M S, in Civil employ, Burma, and recently on leave has on his return from leave on 29th January been appointed Surgeon to H E the Governor of Madras

CAPTAIN J W ILLIUS, I M S, was granted two years' combined and study leave and is not due out till 15th October 1913

CAPTAIN J P CAMERON, I M S, is due out 27th May 1912

CAPTAIN G W MACONACHIE I M S, joined the Madras Jail Department for Training on 17th January 1912

LIEUTENANT COLONEL SIR DAVID SEMPLE, Kt, M D, R A M C (retired), Director of the Central Research Institute, Kasauli, is granted privilege leave for one month and five days with furlough out of India for one year in continuation, with effect from the 6th March 1912

MAJOR W F HARVEY M B, I M S, is appointed to officiate as Director of the Central Research Institute, Kasauli during the absence on leave of Lieutenant Colonel Sir David Semple, Kt, M D, R A M C (retired), on until further orders

DIWAN BAHADUR HIRA LAL BASU is appointed to be Professor of Anatomy at the Medical College Calcutta, with effect from the date on which he assumes charge of his duties

LIEUTENANT COLONEL F P MAYNARD, M B, F R C S, I M S, Professor of Ophthalmic Surgery, Medical College, Ophthalmic Surgeon, College Hospital, Calcutta, is granted privilege leave for three months, with furlough for six months in continuation, with effect from the 15th March, 1912

MAJOR W V COPPINGER, M D, F R C S I I M S, is appointed to officiate as Professor of Ophthalmic Surgery, Medical College Hospital, Calcutta, during the absence on leave of Lieutenant Colonel F P Maynard, M B, F R C S, I M S

THE services of CAPTAIN F P WERNICKE M B, I M S, are placed temporarily at the disposal of the Hon the Chief Commissioner of the Central Provinces

THE services of CAPTAIN J K S FLEMING, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India

THE services of CAPTAIN C H BUBBAR, M B, I M S, are placed temporarily at the disposal of the Government of the United Provinces

LT COLONEL F O KINFALL, I M S, is to officiate for Lt Col Pilgrim as Surgeon Superintendent of the Presidency General Hospital, Calcutta

LIEUTENANT COLONEL FRANK CECIL CLARKSON, of the Bengal Medical Service, retired on 1st March 1912. He was born on 27th May 1862, educated at St Thomas', where he took the M R C S, and L R C P, London, in 1885, and entered the I M S, as Surgeon on 30th September 1886, becoming Major on 30th September 1898 and Lieutenant Colonel on 30th September 1906. He served on the North East Frontier in the Chin Lushai Expedition of 1889-90, with the Lushai and Burma column receiving the medal and clasp in Burma in 1891 with the Thetia column, receiving a clasp, and again on the North East Frontier in Manipal in 1891, receiving another clasp. For the past nine years he had been Sanitary Commissioner of Bengal, but had been on furlough since 1st March 1910

SURGEON LIEUTENANT COLONEL KENNETH MACKENZIE DOWNIE, Bengal Medical Service, retired died at Cannes on 17th February 1912. He was born in December 1843, educated at Edinburgh University, where he took the M B & C M in 1866, and the M B in 1875, and subsequently at Vienna and Munich. He also took the Sanitary Science certificate at Cambridge in 1876. Entering the I M S as Assistant Surgeon on 1st October 1863, when he passed in first, he became Surgeon on 1st July 1873 and resigned his commission, on account of ill health on 14th December 1875. Having recovered, he was readmitted to the service on 15th May 1875 of course with a loss of three and a half years' seniority. This is, we think, the only case, for nearly a century, in which an officer has been allowed to rejoin after resigning. He subsequently became Surgeon Major on 29th December 1884, and Surgeon Lieutenant-Colonel on 29th December 1892, retiring on 1st April 1893. He served in Burma in 1855-57, receiving the medal and clasp and in the Hazara campaign in the N W Frontier of India in 1888, receiving a clasp. For part of his entire service he was in civil employ in Bengal, but after rejoining spent the rest of his service on military duty.

LIEUTENANT COLONEL HENRY THOMSON, of the Madras Medical Service, retired on 1st February 1912. He was born on 1st February 1857, educated at Abodeen, where he took the degrees of M B, C M, in 1879, and the M D, thirty years later, in 1908 and entered the I M S, as Surgeon on 29th September 1883, becoming Surgeon Major on 29th September 1895 Lieutenant Colonel on 29th September 1903, and reaching the selected list on 29th October 1910. He served in Burma in 1886-87, in the operations of the fourth and sixth Brigades, receiving the medal with two clasps. His permanent appointment was that of Sanitary Commissioner, Madras, but for some months past he had been officiating as P M O of the Bangalore and Southern Brigades

LIEUTENANT COLONEL ERNEST NICKHAM HORR, of the Bengal Medical Service retired on 7th December 1911. He was born on 13th September 1865, educated at University College London where he took the M B, London the M D C S, and L R C P London, in 1889 and the D P H, Cambridge in 1890, and entered the I M S as Surgeon on 31st March 1890, becoming Major on 31st March 1902, and Lieutenant Colonel on 31st March 1910. The Army List

MAJOR E R ROSE, I M S, Senior Civil Surgeon, Rangoon, is appointed First Class Civil Surgeon, sub *pro tem* with effect from the 12th January 1912, before noon, in place of Major T Stodart, I M S

MAJOR F A L HAMMOND, I M S, Civil Surgeon, Maymyo, is appointed to officiate as a First Class Civil Surgeon, with effect from the 12th January 1912, before noon

CAPTAIN F T HARRIS, I M S, whose services have been placed temporarily at the disposal of the Local Government, is posted to general duty in the Rangoon General Hospital

ON completion of the duty to which he was posted in this department Notification No 89, dated the 26th February 1912 Captain F T Harris, I M S is posted to the civil medical charge of the Ruby Mines District in place of Major T Stodart, I M S, transferred

ON relief by Captain E T Harris, I M S, Major T Stodart, I M S, is appointed to officiate as Superintendent of the Rangoon General Hospital in place of Major C S Barry, I M S, proceeding on leave

MILITARY ASSISTANT SURGEON E J GIESON, Civil Surgeon, Kyaikpyu is deputed to Amitsar for training in malaria investigation

SECOND GRADE CIVIL ASSISTANT SURGEON K K CHAR FRIJEE is appointed to officiate as Civil Surgeon, Kyaikpyu, during the absence of Military Assistant Surgeon Gieson

MILITARY ASSISTANT SURGEON W L BROOKES Civil Surgeon Kindit, is deputed to Amitsar for training in malaria investigation

THIRD GRADE CIVIL ASSISTANT SURGEON SARADARANIAN SEN GUPTA, I M S (Cil), is appointed to officiate as Civil Surgeon, Kindit, during the absence of Military Assistant Surgeon Brookes

THE services of Captain F P Mackie, I M S Officiating Chemical Examiner, Government Analyst and Bacteriologist for the United Provinces and Central Provinces, are replaced at the disposal of the Government of India in the Home Department with effect from the date he relinquishes charge of his present duties

CAPTAIN R KNOWLES, I M S, senior medical officer, Jhansi, to hold civil medical charge of the district in addition to his military duties, with effect from the 19th February 1912, vice Major C Milne, I M S, transferred

IN supersession of Notification No 622 11-111 dated the 16th February 1912 Major H A Smith I M S Civil Surgeon of Agri privilege leave for six weeks, with effect from the 1st March 1912 Major Austen Smith has been appointed to be one of the Civil Surgeons of Simla

MILITARY ASSISTANT SURGEON C MULLINS I S M D, Assistant Superintendent of Immigration, Embarkation Agent and Medical Inspector of Immigrants, Goaundo, is appointed temporarily to be Civil Surgeon, Lushai Hills

MILITARY ASSISTANT SURGEON H A YOUNG I S M D, Travelling Inspector of Emigrants, Goaundo, is appointed to act as Assistant Superintendent of Immigration Embarkation Agent and Medical Inspector of Immigrants, Goaundo

MILITARY ASSISTANT SURGEON K W BLINKWORTH I S M D, is recalled from leave and appointed to act as Travelling Inspector of Emigrants, Goaundo

MILITARY ASSISTANT SURGEON F G HURT I S M D Civil Surgeon of Lushai Hills, is placed on general duty at Dacca pending further orders

PRIVILEGE leave for three months, in combination with furlough for six months and study leave for nine months, under Articles 231 (a), 260, and 308 (b) of the Civil Service Regulations, and Rules 2 and 6 of the Study Leave Rules, is granted to Major P E Chapman, F B C M, I M S, Civil Surgeon, Jubbulpore, with effect from the 1st April 1912, on the subsequent date on which he may avail himself of it

MAJOR G TATE, I M S is appointed Staff Officer, Medical Mobilization Stores, 7th (Morant) Division with effect from the 1st March 1912, vice Major W H Ogilvie, I M S, vacated

UNDER the provisions of Articles 260, 308 (b) and 233 of the Civil Service Regulations, privilege leave to the amount due combined with furlough and study leave for a total period of eight months and 12 days, is granted to Major C O (S

Bairry, I M S, Superintendent of the Rangoon General Hospital with effect from the date on which he may avail himself of the privilege leave

UNDER the provisions of Article 260 of the Civil Service Regulations privilege leave for six weeks is granted to Captain R Kelsall, I M S, with effect from the 18th March 1912, or such date as he may avail himself of the leave

CAPTAIN B JOHNSON, R A M C, is appointed to hold collateral charge of the Civil Surgeoncy at Thayetmyo in place of Captain R Kelsall, I M S, proceeding on leave

CAPT CLIFFORD A GILL, I M S, has been granted eighteen months' leave

MAJOR S C EVANS, M B, M Ch (EDIN), I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough on private affairs by eleven days

MAJOR L P STEPHEN, M B, D P H, I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough for nineteen days

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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 Operative Obstetrics By Edward P Davis A M M D Professor of
 Obstetrics Jefferson Medical College Octavo of 483 pages with 964
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 Taylor's Deformities & Diseases of Bone 2 vols Macmillan & Co
 Plague Supplement, 1 Journal of Hygiene (7d net) Cambridge Uni-
 versity Press
 Epidemic Dropsy in Calcutta By Major E D W Gray I M S, (Sci
 Memoir No 49)
 Jail Diaries of U P By Major D McCay, I M S (Sci Memoir
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 K S Agnihotri's Label Book Rs 2 Indian Printing Works, Bombay
 Denlow A Surgical Treatment of Locomotor Ataxia Cr 8vo, pp 118
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 Calcutta, Dr Bishop, Sara

Original Articles

REVIEW OF A YEAR'S MEDICO-LEGAL
WORK IN THE CALCUTTA MORGUE, 1911

By O ST JOHN MOSES, M.D., D.Sc.,

F.R.C.S., F.R.S. (E),

CAPTAIN, I.M.S.,

Police Surgeon of Calcutta and Professor of Medical Jurisprudence, Medical College, Calcutta

DURING the year 1911, no less than 356 cases were sent up by the police for *post-mortem* examination (against 283 in 1910), as cases in which death appeared to occur under more or less suspicious circumstances

TABLE I

Distribution of the (356) cases according to months and quarters of the year —

January	24	} = 71 in the first quarter
February	23	
March	24	
April	20	} = 105 " second "
May	39	
June	37	
July	33	} = 92 " third "
August	29	
September	30	
October	29	} = 88 " fourth "
November	33	
December	26	

Total = 356 = 356

TABLE II

Number of cases according to sex —

Males	272
Females	84
Total	356

TABLE III

Number of cases according to race —

Hindu	236
Mahomedan	62
European	15
Eurasian	17
Chinese	2
Japanese	1
Indian Christian	6
Doubtful or unknown	17
Total	356

TABLE IV

Number of cases according to age-periods —

At or about the time of birth	14
Up to and including 1 year of age	6
Above 1 and up to and including 5 years	11
" 5 years	11
" 10 "	17
" 15 "	42
" 20 "	43
" 25 "	41
" 30 "	45
" 35 "	37
" 40 "	25
" 45 "	22
" 50 "	8
" 55 "	19
" 60 "	4
" 65 "	7
" 70 "	1
" 75 "	0
" 80 "	1
" 85 "	1
" 90 "	0
" 95 "	1
" 100 "	1
Total	356

TABLE V

Number of inquests held

The City Coroner held an inquest in	250 cases
No inquest was found to be necessary in	106 "
Total	356 "

TABLE VI

The viscera preserved at the time of *post-mortem* examination were disposed of as follows —

Sent to the Chemical Examiner to Government for analysis	133
Destroyed after disposal of the case, under instructions from the Commissioner of Police	223
Total	356

TABLE VII

Result of Chemical Examiner's analysis in 133 cases —

Poison found (including cases in which alcohol only as differing from other poisons found) in	73
No poison found in	60
Total	133

TABLE VIII

Analysis of the 73 cases of poison found by the Chemical Examiner —

Opium	40 cases
Alcohol only	10 "
Opium and alcohol	2 "
Morphine and alcohol	1 "
Cocaine and alcohol	1 "
White arsenic (including 2 cases in which "rough on rats" was used)	4 "
Yellow arsenic	2 "
Carbolic acid	3 "
Sulphuric acid	1 "
Hydrocyanic (or prussic) acid	2 "
Cyanide of potassium	3 "
Aconite	2 "
Strychnine	1 "
Red sulphide of mercury (China sindur or vermillion)	1 "
Total	73 "

The above table calls for a few remarks on points of interest. Thus, opium still maintains the first place among poisons found by the Chemical Examiner in the viscera and stomach-contents sent to him for analysis from the Calcutta Morgue. It alone accounts for 54.7 per cent of all cases in which poison was detected (against 56.6 per cent in 1910), excluding those cases in which opium was discovered in combination with alcohol.

Again, it may be observed that among the arsenic cases "rough on rats" accounted for two deaths, one of which, as will be seen later, was of a suicidal nature, while the other was accidental.

Further, in Table VIII is included a case of death from (acute) poisoning with the red sulphide of mercury ("cinnabar"). This is evidently of rare occurrence, as a well known text-book referring to this poison states that "no acute case of poisoning by it in man has been met with," although chronic cases have occurred. The present case is the only one I have been able to record. It took place in August 1911, in a Chinaman, 30 years of age, but whether the poison was taken suicidally or not, the evidence

was not sufficient to show, and the jury therefore left the verdict on this point "open."

It may be of some interest at this time to examine the cases of death by poisoning with the cyanides. Five cases of this nature occurred in 1911 and two in the preceding year, and in not one of these was death found to be homicidal. Indeed it may safely be urged that in all cases of poisoning by means of the cyanides, the presumption is against homicide. For it appears inconceivable that any poisoner taken from the intelligent ranks of life, no matter how great a novice he be at the art, would entirely omit to consider the question of selecting a poison with suitable physical characters, and would moreover select, above all, the most unsuitable for the purpose of homicide. The fact that the well-known compounds of prussic acid have such a strong and piercing odour, would at once put him off the use of it, as he would doubtless fear the consequences of a detection of the poison by the intended victim, and of an alarm being raised at a time, perhaps, a little inconvenient for himself. The odour of the poison is so penetrating that I have never failed to detect its presence by the sense of smell when standing near the face of the unopened body, even several hours after death, not to mention the various parts and tissues of the body when once it was opened or the stomach and its contents. So far as concerns the power of locomotion and of volition in the interval between the taking of a fatal dose and the occurrence either of insensibility or of death, it is very difficult indeed to make a definite statement which will apply to every case, and I can find no such statement made by any authority on the subject. So much appears to depend on the dose of the poison, on the state of the stomach, on the general physical condition of the person taking the substance, etc. Even the exact mode in which death is caused by these substances, has been the subject of much discussion. Stevenson has recorded a case in which death from hydrocyanic acid did not occur for an hour and a quarter (Guy's Hosp. Reps., 1869). The power of locomotion and of performing volitional acts is not necessarily a matter of great importance in deciding between suicidal and other cases, for, presuming in any particular instance that a person is resolved on self-destruction, he may quite easily, *before* taking the fatal dose, destroy documents in the fire, tidy up his room, do away with the phial and lay himself out in bed. The points I wish to accentuate in reference to this set of poisons are (1) that in death from their effects the presumption is in general strongly against homicide (except when associated with violence), is distinctly against accident (except perhaps where a child is concerned), and decidedly in favour of suicide, and (2) that nothing definite can be stated regarding the power of locomotion and volition in the interval between the taking of the poison and the onset of insensibility or the occurrence of death. All

that has been said regarding the cyanides applies also to the acid,—hydrocyanic or prussic acid or hydrogen cyanide, but perhaps in a somewhat modified manner. The odour of this acid as found in commerce is not so strong that it cannot be masked by mixing with a large quantity of say wine and water. Thus it may be made to elude the observation of the intended victim when administered homicidally. Still I hold that it would probably be an expert poisoner alone who would know this and who would elect to use it in spite of its characteristic odour. If I might refer to a recent case of death due to this poison, I should like to state as my opinion that whether death in that case was actually suicidal or homicidal, certain it appears that all the circumstances immediately surrounding the death itself could be quite satisfactorily explained on the theory of suicide.

TABLE IX

The total number (356) of cases sent up for *post mortem* examination, classified according to nature of death—

I—Natural causes—	
Cases where no inquest was held	102
Cases in which an inquest was held	43
	<hr/> 145
II—Violent deaths (including deaths by poisoning)	211
Total	<hr/> 356

In the year under review there was a great increase in the total number of *post-mortem* examinations made, as compared with the year 1910. Fortunately, from the point of view of crime in Calcutta, this was mainly due to an increase in the number of cases in which death resulted from natural causes, the percentage of these being 39.7 in 1911 against 32.1 in 1910.

TABLE X

The 211 violent deaths classified—

1	Deaths by accident or misadventure	90
2	Suicidal cases	78
3	Homicidal cases	14
4	Doubtful (on the evidence adduced)	25
5	Due to rash and negligent acts (generally without suicidal intent)	4
	Total of violent deaths	<hr/> 211

The noteworthy feature in this table is that both the actual number of homicidal cases and the percentage ratio which this bears to the total of violent deaths, have diminished in 1911 as compared with the year previous, while the suicides have increased appreciably. There were 67 suicides in 1910 bearing a percentage ratio 34.8 to total number of violent deaths which occurred during that year, whereas the corresponding figures for 1911 have gone up to 78 and 36.9 respectively.

Analysis of the deaths due to natural causes—
The causes of death in these cases were, on the whole, very similar to those reported last year, except that in place of embolism of the

pulmonary arteries, and cerebral tumour, there occurred cases of thrombosis of the lateral sinus, cholera and intussusception

As before, in a few instances, alcohol, alcohol with a trace of opium, or opium in traces, was found in the viscera by the Chemical Examiner, and yet the cases were returned, on the medical and general evidence, as of death from natural causes, the poisonous substances discovered not being regarded as the cause of death in these cases

TABLE XI

Analysis of the 90 accidental (violent) deaths—

These may be arranged in the following manner according to the cause of death —

1	Poisons—	
	(1) Opium	4
	(2) CO (from charcoal fires)	2
	(3) Aconite	2
	(4) Yellow arsenic	1
	(5) Sulphuric acid	1
2	Motor car accidents	5
3	Falls from a height	19
4	Tramway accidents	6
5	Burns	7
6	Drowning	6
7	Carriage accidents	14
8	Railway accidents	6
9	Falls and other forms of accidental violence occurring on boardship	3
10	Fall on a person of a weighty object from a height	6
11	Carriage and tramcar collision	0
12	Bullock cart accidents	1
13	Bicycle accidents	0
14	Suffocation	0
15	Exposure after over indulgence in alcohol	0
16	Accidental wounds becoming septic and followed by septicæmia	2
17	Accidental wounds followed by tetanus	1
18	Snakebites	1
19	Goring by a bull	1
20	Gunshot (bursting of a barrel)	1
21	Explosion of fireworks	1
TOTAL		90

TABLE XII

Analysis of the 78 suicidal (violent) deaths —

1	Poisons—	
	(1) Opium	33 (42.3 per cent of total suicides)
	(2) Cyanides	4
	(3) White arsenic	3
	(4) Carbolic acid	4
	(5) Morphine	1
	(6) Yellow arsenic	1
	(7) Stychnine	1
		47 (60.2 per cent of the whole)
2	Hanging	19 (24.3 per cent of the whole)
3	Drowning	1
4	Gunshot	4
5	Cut throat	1
6	Fall from a height	2
7	Burns	1
8	Strabbing	1
9	Strangulation	1
10	Fall on a railway line	1
TOTAL		78

The total number of suicidal (violent) deaths in 1911 was somewhat in excess of that for 1910 (i.e., 78 against 67), as also was the figure for suicidal deaths by means of poisons alone

(47 in 1911 against 43 in 1910) The percentage ratio of the suicides by means of poison, to all suicidal deaths was 64 in 1910, but only 60.2 in 1911, and that of the suicides by means of opium alone to all suicidal deaths was 50 in 1910 and only 42.3 in the year under review. However, the actual number of suicides by means of opium remains much the same for the two years, namely, 34 in 1910, and 33 in 1911. The figures for hanging and drowning have remained extraordinarily constant for the two years in question, numbering respectively 19 cases and 1 case during each year. The general order in the above table remains as before, poisons taking the lead, and opium still remaining far and away the favourite means of self-destruction, while hanging comes second and accounts for 24.3 per cent of all suicidal deaths (against 28.4 for the previous year). Apart from opium and hanging, the other methods mentioned in the table were together responsible for 26 cases in the year 1911 (against 14 in 1910), 14 belonging to the group of poisons and 12 to diverse other methods. Of the 4 suicidal deaths by gunshot, 2 were committed by Europeans and 2 by Eurasians.

No special remarks are suggested by any of the items in Table XII, excepting opium. Regarding this drug as a means of self-destruction, and the desirability, admitted on all hands, of placing some restriction on the sale of so effective and popular a poison, I find there is nothing I can add to what I have already said in my report for the previous year. It is doubtless a more simple matter to advocate the placing of such a restriction, than it is to suggest an effectual and practicable method of doing so. The fact remains, however, that at the present time any one may procure with the greatest ease as much opium (not to mention other poisonous drugs) as will amply suffice for the purpose of destroying human life,—a condition of things which seems to require some check being placed on it.

The motives for the crime remain the same and at times those ascribed appear really too trivial to be credible. I do not know what I can add to the comments I previously made on this subject.

TABLE XIII

I—Opium suicides		33
(a) According to sex—		
Males	22	
Females	11	{ Prostitutes 1 Others 10
		33
(b) According to age periods—		
From 10 to 15 years of age	Males	Females
" 15 to 20	0	1
" 20 to 25	9	3
" 25 to 30	6	2
" 30 to 35	4	2
" 35 to 40	1	1
" 40 to 45	1	0
" 45 to 50	1	1
" 50 to 55	0	1
TOTAL		22 + 11 = 33

II—*Suicides by hanging* . 19

(a) According to sex—

Males	10	{ Prostitute Others	1 8
Females	9		
<hr/>			
19			

(b) According to age periods—

	Males	Females
From 5 to 10 years of age	0	1
" 10 to 15 "	1	2
" 15 to 20 "	1	2
" 20 to 25 "	4	3
" 25 to 30 "	0	0
" 30 to 35 "	2	0
" 35 to 40 "	0	0
" 40 to 45 "	0	0
" 45 to 50 "	1	1
" 50 to 55 "	1	0
<hr/>		<hr/>
TOTAL	10	9 = 19

The greatest number of suicides by these methods were committed between the ages of 15 and 35 years. Opium accounted for twice as many deaths among males as among females, whereas hanging claimed about an equal number of victims from each sex.

TABLE XIV

The 78 cases of suicidal (violent) deaths classified according to race—

Hindu	66
Mahomedan	5
European	3 { 2 gunshot 1 potassium cyanide
Eurasian	3 { 2 gunshot 1 opium
Japanese	1 (stabbing)

TOTAL 78 cases

The case of the Japanese who committed suicide by stabbing himself with a knife, is one of some interest. The knife used was 9 inches long in the blade measuring $1\frac{1}{2}$ inch at its widest part near the handle, and ending in a sharp point. The man lay in bed, and entering the point of the knife on the right side of the neck in front of the sterno-mastoid muscle, he deliberately plunged the weapon in. The knife passed transversely through the neck towards the left, behind the larynx, piercing the œsophagus from side to side and severing the great vessels on the right. The man apparently had just strength enough to withdraw the knife which fell from his hand and was found on the bed a few inches away from his neck, near his right shoulder. This is an instance not only of very deliberate intention in the committing of suicide but also of a remarkably singular way of accomplishing the deed.

TABLE XV

Analysis of the 14 homicidal (violent) deaths according to mode of occurrence—

1 Stabbing (including one case done by means of a fish spear)	7
2 Kicks, blows, etc., and falls in consequence	4
3 Strangulation	1 (prostitute)
4 Throttling	1 (new born child)
5 "Lathi" blows	0
6, Gunshot	1

TOTAL 14

The order in this table remains the same as for the previous year, and stabbing again accounts for the largest number of homicidal cases. In 1911 the homicidal cases, numbering 14, contributed 6.6 per cent to the total number of violent deaths, whereas in 1910 the corresponding figures were 15 and about 8 per cent. (The total number of violent deaths was 211 in the year under review, and 192 in 1910).

TABLE XVI

The 25 cases of (violent) death classified as "doubtful" in Table X of this report, represent those cases in which, on the general evidence adduced, the jury found it impossible to arrive at a definite conclusion as to whether the deaths were accidental, suicidal or homicidal in their nature. The verdict of the jury in these cases was therefore left "open."

These 25 cases are accounted for as follows—

1 Poisons—	
(1) Opium	8
(2) White arsenic (in the form of "rough on rats")	1 (child of 2½ years)
(3) Mercurial poisoning (red sulphide of mercury)	1
(4) Cocaine	1
(5) An irritant poison (unknown nature)	1
(6) Chloroform	1
2 Drowning	13
3 Violence of a mechanical nature	4
4 Strangulation	1
5 Hanging	1
6 Gunshot	1
7 Trauma	1
8 Induction of abortion	1
TOTAL	25

In the case in which death resulted from the induction of abortion, in "abortion stick" was found in the genital canal. It was $4\frac{1}{2}$ inches in length and cylindrical in form. Its inner end was sharp pointed and at this end was wrapped a piece of thin cloth which had probably been soaked in some medicament. In the attempt to insert this stick into the cavity of the uterus, the point of the appliance had been made to pierce the posterior wall of the cervix, $1\frac{1}{2}$ inch above the os uteri externum, so that the sharp end was found in the pouch of Douglas. Septic peritonitis supervened and came to be the immediate cause of death. The uterus appeared to be about five months pregnant.

TABLE XVII

Of the 4 cases which were returned by the Coroner and his jury as cases of death due in some manner to rashness and negligence (without criminal intention), the following is the analysis—

Carriage	1
Butlook cart	1
Railway	1
Motor car	1
TOTAL	4

TABLE XVIII

The following are a few discoveries of interest from the point of view of pathology and morbid anatomy made in the cases that came to the *post-mortem* table —

I — Rupture and perforation of the internal organs due to violence alone —

	Rupture	Perforation
Liver	12	0
Liver and spleen	5	0
Spleen	3	0
Stomach	3	1
Intestines	5	0
Kidneys	1	0
Bladder	1	0
Uterus	0	1

II — Perforation of large blood-vessels due to disease alone, and rupture of heart and large blood-vessels due to violence with or without previous disease —

	Rupture	Perforation
Pericardium	2	0
Right auricle of heart	2	0
Left auricle of heart	2	0
Left ventricle of heart	1	0
Thoracic aorta, 1st part	1	1
Thoracic aorta, 2nd part	0	1
Heart in all its cavities	2	0

III — Disease of heart and blood-vessels —

(a)		Endocarditis and Endoarteritis	Atheroma	
	Aortic valve	0	34	
	Mitral valve	10	0	
	Thoracic aorta	0	34	
	Pulmonary artery	0	1	
(b)		Aortic valve	Mitral valve	Thoracic aorta, 1st part
	Stenosis	3	1	0
	Vegetations	0	2	0
	Ulceration	0	0	3
	Aneurysm	0	0	3

IV — Abnormalities —

(a) In the way of disease, etc. —

	Liver	Spleen	Kidneys	Ovaries	Uterus	Fall tubes
Abscess	0	0	1	0	0	0
Stones	7 (in gall bladder)	0	1	0	0	0
Cirrhosis	45	0	4	0	0	0
Way degenerate	2	0	0	0	0	0
Fatty do	3	0	0	0	0	0
Infarct	0	2	0	0	0	0
Cyst	1	0	3	12	0	2
Granular con	0	0	2	0	0	0
Tracted	0	0	0	0	3	0
Tumour	0	0	0	0	0	0

The case I would draw special attention to, is that of the stone discovered in the (right) kidney in the body of one *Pahelwan*, a Hindu male, aged 40, who died on the 25th August 1911 as the result of disease of the kidneys and heart. The entire mass as removed from the body was as large as the head of a newborn child. The kidney substance had practically disappeared, and, within what looked like the ventricle of a bull's heart, made up of thickened capsule and indurated perinephric fat, lay a single large stone attached to the inside of the containing cavity by means of two cartilaginous-looking pedicles. So little did the organ bear resemblance to a kidney that it was impossible for those who did not see it

removed from the body, to recognise it as a kidney. The entire specimen is perfectly unique and it has, of course, been carefully preserved. The stone weighs 10½ oz and measures 3½ inches in its longest diameter. It would be very interesting to learn what figures have been placed on record for the largest stone discovered in the human kidney.

Another discovery, not included in the above table, was made in the case of the *Alu Khan*, aged 30 years, a Mahomedan male, who died on the 31st November 1911. The ordinary kidneys were replaced by means of a single horse-shoe shaped kidney situated in front of the promontory of the sacrum. The horse-shoe had its concavity upwards and there was a small detached portion of kidney-substance on the inner side of the left cornu. The arrangement of the ureters too was remarkable inasmuch as the cornua and the detached portion were joined above by means of a tube running transversely across, while from each half of the horse-shoe descended a separate ureter in front, the two joining together slightly on one side of the mesial line and passing downwards to open into the bladder near the fundus. This condition of things must be very rare.

In one case, that of a Hindu male of adult age, an accessory or supernumerary spleen was found lying on the inner side of the spleen itself. The main organ weighed 3¼ oz and the accessory portion only ¾ oz. The latter had all the characters of splenic tissue.

In the 356 cases examined *post-mortem* during the year, only 7 cases were found to contain calculi in the gall-bladder and biliary ducts, making a percentage of 1.9 only. There is a great deal of difference between this figure and those given for Europe by a distinguished German authority as quoted by Professor Moynihan, of Leeds. This quotation has it that "on an average every tenth human being and of elderly women, every fourth, has gall-stones." In my report for 1910 I pointed out that in 283 cases examined, only 4 cases showed gall-stones, making a percentage of 1.4, as compared with 5.9 recorded in Philadelphia. These figures point to cholelithiasis being a much less frequent malady in Bengal than it is in either Europe or America. The question as to the reasons for this difference may be referred to experts in pathology. Has it to do with climatic conditions, dietary, the use of alcohol or with a combination of these?

As a special point concerning *post-mortem* appearances which I wish to draw attention to and which I have not seen noticed in any text-book on the subject is in reference to cases of opium poisoning. In almost every such case I have observed that the larynx, trachea and large bronchi contain a pink frothy mucus. I have not noticed this appearance so constantly present in cases of poisoning with other substances or in other forms of asphyxial death. The pink frothy mucus is not to be regarded as a result of decomposition, for I have seen it present even where the

post mortem examination was held within a very short time after death and before putrefaction has had time to set in to any extent

(b) In regard to weight —

Liver — The weight of the adult liver varied between 22 oz and 115 oz

Spleen — The smallest adult spleen discovered weighed 1 oz and the largest 48 oz

THE INTRA-CAPSULAR OPERATION FOR CATARACT (SMITH'S METHOD), FROM THE POINT OF VIEW OF THE CIVIL SURGEON

By F POWELL CONNOR, I.R.C.S.,

CAPTAIN, I.M.S.,

Civil Surgeon, Gaya

A GOOD deal has already been written on the subject of extraction of the cataractous lens in its capsule. It is my intention, as far as possible, to avoid any controversial questions and to merely place on record my own opinion of the operation based on actual results obtained.

The extraction of cataracts in their capsules, as performed in India, is an operation of comparatively recent date. The credit for elaborating the technique adopted by most operators in India, is due to Lieutenant-Colonel Henry Smith, as we all know. What knowledge I have of the subject, is derived from his personal teaching. The operation has not as yet been adopted by the majority of ophthalmic surgeons, and any record showing the results obtained by any individual operator must be of some value.

I may say at once that in my opinion the intra-capsular operation is the ideal one in practice, as it must be acknowledged to be in theory. My first experiences were confined to the ordinary capsulotomy operation and it was not until I had done about four hundred operations by this method, that I first began to remove cataracts by the intra-capsular method. During two winter seasons at Gaya I did about 1,400 operations by Smith's method. This is a very small number, as compared with the figures of these who have had greater opportunities than myself. But the number is sufficient to entitle me to form an opinion on the subject.

It cannot be too strongly emphasized that no amount of book reading or verbal instruction will enable the beginner to perform this operation efficiently. Other surgeons have insisted on this point. It is the most difficult operation in surgery for the beginner to perform uniformly well that I know of. It is quite easy to understand why so much opposition has been offered against its adoption. The ordinary ophthalmic surgeon, who does ten or fifteen operations in the year by the capsulotomy method with very fair success, has not the opportunity for learn-

ing the new operation, while many who have greater opportunities lack a teacher. It is not intended to convey the idea that it is necessary to do a vast number of cases and perhaps to run a certain number of eyes before proficiency can be attained. What is meant is this—the individual steps of the operation are all difficult and are best done in a particular way if difficulties or disasters are to be avoided. Other operative procedures in surgery have to do with conditions which vary considerably in different individuals but when extracting a cataractous lens we have before us certain definite physical and other data which are to a great extent uniform and require definite recognition. For instance, certain mathematical considerations are necessary in making the incision, the iris must be grasped very lightly and never pinched, pressure must be made with the right amount of force at the right spot in the right direction and at the right moment, and so on. It naturally follows that in each step of the operation it is essential to follow a definite procedure to obtain the best results. But in spite of this fact it is curious to note that a great many operators who profess to extract cataracts by this method, introduce various modifications of their own, often in the very beginning of their experience.

From the point of view of the Civil Surgeon in India the extraction of cataracts by the intra-capsular method is undoubtedly the operation of election. The operation is a rapid one—12 to 15 cataracts can be extracted within the hour by the ordinarily skilful operator—and any preparation of the patient which is necessary can be done on the table, immediately before the operation. No tutoring of the patient is necessary as a general rule, it is best not to speak to him at all. The rapid, clean-cut, radial incision—without any sawing movement—is a great advantage and spares the knife-edge to such an extent, that over 100 sections can be done with the same Graefe's knife, provided it is a good one. The use of a strong antiseptic douche cleans the dirtiest of eyes and suppuration is a very rare event indeed.

In ordinary cases provided the patient is not unusually nervous and when no complication exists which might introduce some special risk both eyes are operated on. This procedure is quite justifiable when doing the intra-capsular operation but few operators would countenance it in the case of extraction after capsulotomy. When one cataract is mature and the other immature, both can be removed at the same time, for it is now well known that by this method immature cataracts can be extracted with even greater facility than mature ones.

This possibility of removing immature cataracts with perfect safety, means an advance in

Number and Name	Age (Approx)	Date of Admission & Discharge	One or both eyes	Complics	Accidents during operation	Visual result	REMARKS
1 G L	45	17 1 12 27 1 12	R E	Nil	Capsule burst, partly extracted	Fair	Some capsule remains
2 J	50	15 1 12 27 1 12	R E	Tension +	Nil	Good	Tumbled
3 D	50	19 1 12 28 1 12	R E	Nil	Nil	Good	Tumbled, patient troublesome
4 Ch	50	18 1 12 28 1 12	R E	Nil	Nil	Good	Very nervous
5 Ch	40	19 1 12 28 1 12	B E	Nil	Nil	Good	Left tumbled
6 Bal	50	19 1 12 28 1 12	L E	Nil	Nil	Good	Pt very deaf R E done 3 years ago
7 B	45	18 1 12 28 1 12	R E	Nil	Nil	Good	L very immature
8 D L	50	19 1 12 30 1 12	L E	Nil	Capsule burst and extracted	Good	R E operated on 3 years ago
9 K	51	15 1 12 25 1 12	B E	Synechiae in both eyes	Nil	Good	
10 M	50	15 1 12 25 1 12	B E		L capsule burst, most extracted	Good	
11 R	50	15 1 12 25 1 12	R F	Nil	Nil	Good	Patient refuses left
12 S K	45	12 1 12 24 1 12	R E	Nil	Nil	Good	Tumbled L E operated on 3 years ago
13 R	45	12 1 12 24 1 12	L E	Nil	Capsule burst, most extracted	Good	R E operated on last year
14 N	50	14 1 12 24 1 12	B E	Nil	Nil	Good	
15 A	50	14 1 12 24 1 12	L E	Nil	Nil	Good	Tumbled R E done last year
16 P	45	12 1 12 24 1 12	L E	Post Synechiae	Nil	Good	R E couched blind
17 L	45	13 1 12 24 1 12	R E	Nil	Nil	Good	L E unhealthy, not done
18 B L	50	6 1 12 17 1 12	B E	Nil	Nil	Good	
19 A	45	8 1 12 17 1 12	L E	Nil	Capsule burst, extracted	Good	R E couched 1 year ago vision fair
20 I	50	9 1 12 19 1 12	B E	Nil	Nil	Good	
21 J	40	10 1 12 21 1 12	R E	Nil	Nil	Good	Tumbled
22 M	45	12 1 12 21 1 12	R E	Nil	Nil	Good	Very nervous
23 S	50	11 1 12 21 1 12	R E		Nil	Good	L E couched 1 year ago, blind
24 C	50	11 1 12 21 1 12	L F	Anti chamb very shallow	Nil	Good	Iris a little caught up at outer angle
25 A	45	9 1 12 21 1 12	R E	Sclerotic, paper white & stretched	Capsule burst, most extracted	Poor	Some mitis & slight occlusion of pupil
26 S	50	15 1 12 24 1 12	B E	Nil	Nil	Good	
27 N	50	8 1 12 19 1 12	B E	Nil	L E capsule burst most removed	L E very fair R good	Some capsule left Iris caught up at outer angle
28 J	50		R E	Nil	Capsule burst, most removed Patient excluded extracts	Fair	No iridectomy done Some capsule remains Patient struggled

Number and Name	Age (Approx)	Date of Admissn & Discharge	One or both Eyes	Complics	Accidents during operation	Visual result	REMARKS
29 M	45	1 1 12 17 1 12	R E	Nil	Nil	Good	L E opd on last year
30 Z	50	7 1 12 17 1 12	B E	Nil	Nil	Good	Both tumbled
31 M	50	8 1 12 17 1 12	R L	Ant Synechia	Nil	Good	Stupid & nervous pat
32 B	50	10 1 12 19 1 12	R E	Nil	Nil	Good	Tumbled
33 J	50	8 1 12 19 1 12	R E	Cornual loucoma	Nil	Good	
34 D	45	10 1 12 19 1 12	R E	Nil	Capsulo burst, most extracted	Good	Othor eye operated on by capsule
35 S R	50	10 1 12 19 1 12	R E	Nil	Nil	Good	L E couched in Bonaires, can't count fingers
36 R	50	10 1 12 19 1 12	L E	Ant Syn	Nil	Good	
37 P	45	5 1 12 16 1 12	L E	Nil	Nil	Good	R E blind T +
38 N,	50	5 1 12 16 1 12	L E	Nil	Nil	Good	R E T + Immature
39 J	40	27 12 11 16 1 12	R E	Pat very anemic	Small drop of vit reous escaped	Good	L pupil integ
40 I	40	6 1 12 16 1 12	R E	Eyes prominent pupils hyperactive	Nil	Good	Capsuly done
41 M	50	5 1 12 16 1 12	B E	Nil	R tumbled & drop of vitreous escaped	Good	
42 N	50	23 1 12 2 2 12	B E	Nil	Drop of vitreous escaped R E	Good	Pat struggled
43 O L	50	5 1 12 16 1 12	R E	Ten + Eyes prominent	Capsulo burst, extracted	Good	Pat gave trouble
44 O	50	5 1 12 16 1 12	B E	Conj injected L E	Nil	R E good L E some occlusion of pupil	
45 M	50		R E	Post Syn	Nil	Good	New assist
46 D	55	1 1 12 11 1 12	R E	Ten + A C shallow	Nil	Good	
47 B	50	15 1 12 27 1 12	B E	Nil	Nil	Good	
48 P	48		R E	Ten + Remains of old nitis	Nil	Fair	L E blind Glaucomatous Capsu lotomy done
49 P	50	20 1 12 31 1 12	L F	Ten +	Nil	Good	
50 P	50	20 1 12 31 1 12	B E	Nil	Nil	Good	R tumbled

ophthalmic surgery which it is hard to over-estimate

High tension is a contra-indication and congenital cataracts should not be operated on by this method. The same applies to cataracts in children and adolescents. In some eyes the vitreous seems to be in a much more fluid condition than is normally the case and an escape of vitreous is then much more liable to occur. There are very few other conditions which would negative the performance of this operation.

The after-treatment is simplicity itself—the bandage remains on as a general rule, till about

the 10th day and is then replaced by a shade. If the patient complains of much discomfort or any pain, the eye should always be looked at immediately. In uncomplicated cases it is extremely rare for any trouble to arise even in 'mofussil' hospitals, where there is no nursing worthy of the name and the great majority of the patients shift the bandage a little after a day or two, just to have a peep. The irritable eye, not infrequently met with after the capsulotomy operation, with some circum-corneal injection and sometimes leading on to nitis, is conspicuous by its absence. This is due to the irritation caused

by tags of capsule remaining adherent to the iris

The secondary operation of needling, which is so often necessary after removal of cataract by the capsulotomy method, is a very serious disadvantage in 'mofussil' practice. The ordinary pauper patient who comes to the 'Sadai' hospital, has spent some years making up his mind and bracing up his courage. When he does come, as often as not he has to beg his way. Failing vision is to him equivalent to failing bread. It is not reasonable to expect such patients to return at some future time for a secondary operation. An operation which gives good vision for both eyes at one sitting is obviously the ideal operation from their point of view, and they are learning to go to the surgeon who can do this for them.

As regards my own results, a record is attached of 64 eyes operated on in 50 patients. Detailed notes have been kept of all the cases operated on by me, and each case is seen by me, whenever possible, before leaving hospital. Space alone forbids a greater number of cases being given in detail and a mere statement of the percentage of successes obtained is valueless, as with a rigid selection of cases it would not be difficult to obtain 100% of successes by this method. These 50 cases are taken without absolutely any selection from a bundle of notes at my side, the number is small, but will give some idea of the accidents which occur, the results obtained, etc. The visual results should also have been worked out more accurately, but I have never had the time to do this. The names and addresses of all patients is recorded, and details of their after-history can be worked out at any time by any one who has the time and the energy.

The time must come soon, when it will be an essential part of the training of every ophthalmic surgeon to be able to remove cataracts by the intra-capsular method, as the public will demand it. No sensible man with an immature cataract will sit and wait for months or years because his particular surgeon has not learnt how to remove a cataract until it is ripe.

There is one other perennial question I should like to refer to, when dealing with the subject of the operative treatment of cataract, and that is the enormous amount of partial and total blindness caused by couching. In the Gaya District, as in many others, itinerant 'vands' perform a good many of these operations every winter. Many eyes are lost at once by suppuration, some more gradually by the resulting glaucoma while most become still more slowly blind from progressive atrophy of the retina. A few undoubtedly result in good vision, lasting for years after the operation. These facts are well known by most Civil Surgeons, the difficulty is to find a remedy. Prosecution of

the offenders seems to be useless at present. A great deal of good can be done by warning the villagers of the dangers of the operation by circulating a notice to be read at 'chaukidari' parades, and in the case of dwellers in cities by publishing a similar warning by beat of drum. Such steps I have found to be of the greatest utility. In course of time even the rustic will learn that his best chance of obtaining good vision is to come in to the Civil Surgeon for treatment, but until this happy state of affairs is established, it is the duty of the district authorities to do all they can, on the above lines, to help the interests of ignorant country folk. Personally I have always found that the district authorities are quite ready to help the Civil Surgeon in this way. The establishment of a fund at the district head-quarters to provide money for the carriage of pauper patients from their villages to the 'Sadai' hospital is also a most useful provision and saves many who would otherwise fall into the hands of the 'vand'.

TEN MONTHS' WORK IN MILITARY EMPLOY

BY J HAY BURGESS, M.D., M.R.C.P., F.R.C.S.,

CAPTAIN, I.M.S.,

Surgeon to H. F. the Governor of Bengal

How well I remember my father endeavouring to dissuade me from entering the I.M.S. One of the arguments he used was that during the time one had to serve with a regiment so little opportunity was there of practising one's profession, that, unless by an effort of will one strove to keep up to date by reading in surroundings not at all conducive to work, one would degenerate into a being devoid of all professional interest and become a disappointed pessimistic failure.

Fortunately my experience has not justified this gloomy outlook. At practically no period of my service which now comprises 8½ years beyond an occasional short interval, have I had to grumble at my lot and want of professional work.

The reason I write of the last 10 months is that it is just 10 months since I returned from leave and a period during which I have kept a somewhat more careful record of my work than usual.

Although from a surgical standpoint the record cannot dream of comparing with that of any one in our presidency towns, yet, I feel sure, compares favourably with that of one in the mofussil.

The following operations were actually performed by myself and do not include operations in which I simply helped others.

Laminectomy	1 Appendicectomy	11 Salpingectomy & Ventrifixation	1
Prostatectomy	1 Omentopexy	1	
Hysterectomy	1 Hernia	9 Frontal sinus	2
Ovariectomy	2 Semilunar cartil	1	
	age	1 Pancreatic cyst	1
Excision Elbow	1 Liver abscess	4 Otitis media	1

Excision jaw (lower)	1 Castration	3 Hemorrhoids	5
Amputation thigh	1 Hydrocele	5 Cataracts	5
Vesical calculus	1 Hydatid Cyst	1 Osteoma	1
Wring patella	1		

The appendicectomies include 2 natives and 9 Europeans. One case particularly was interesting and thus I purpose describing.

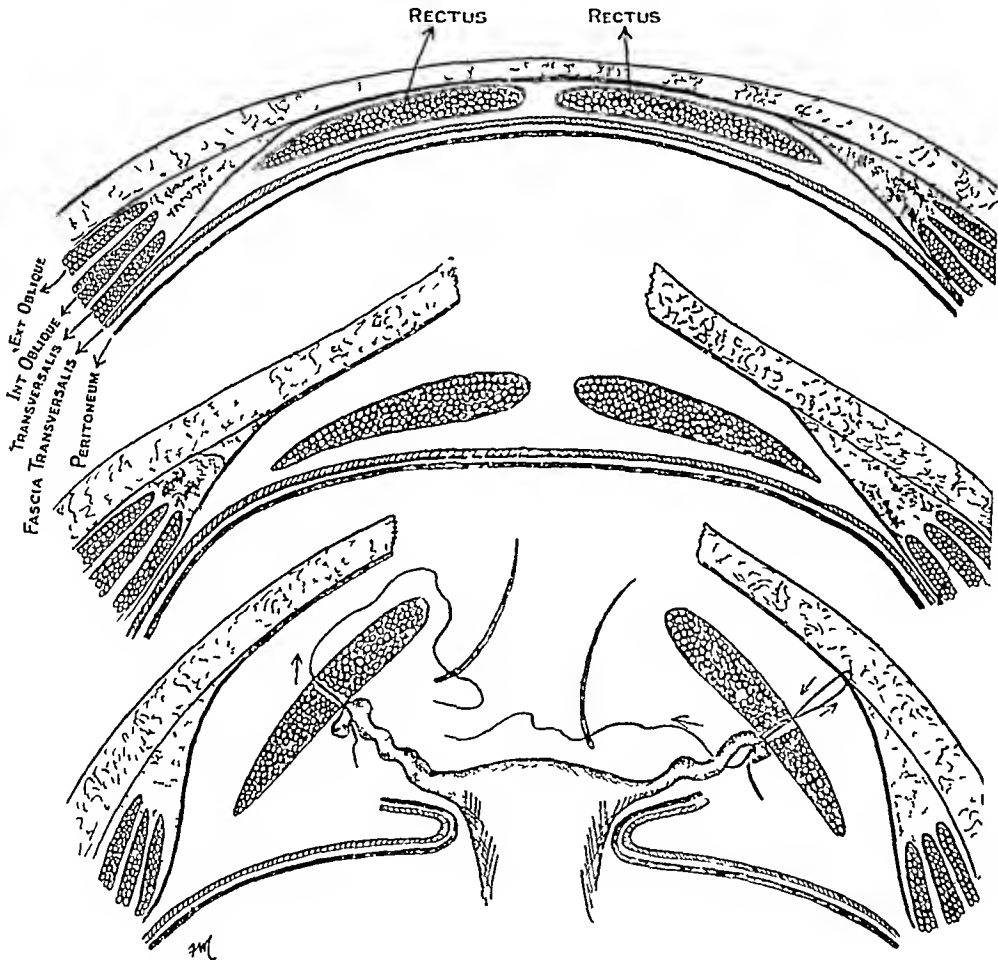
While in St. Thomas' Mount, Madras, I was requested to proceed to Secunderabad, there to see a lady with a view to performing hysterectomy on her.

It seems that she had had craniotomy performed on two pregnancies and at the 3rd pregnancy induction had been performed at the 7th month and a living child born. She, however, did not wish to run the chance of becoming pregnant again, and as she was suffering from a prolapse the doctor in charge thought hysterectomy was indicated. On seeing the lady I concluded that hysterectomy was unjustifiable and suggested the following operation which was agreed to and accordingly performed.

the extra peritoneally placed tubes somewhat remote.

Although usually in pelvic operations I have been in the habit of employing a transverse incision as suggested by Mynard of Glasgow, in this case I made the usual vertical incision below the umbilicus, exposed the 2 recti muscles and undermined them towards the lower end of the incision. Then the peritoneal cavity was opened and the tubes found. About an inch and a half was cut off the fimbriated extremity of each after ligaturing the tube proximally. The cut ends were then pulled on and the uteri thus brought well into the lower part of the parietal incision. The extremity of the left tube was then tucked under the left rectus but superficial to the subjacent peritoneum and fascia and sutured there as depicted in the diagram.

As here there is no posterior rectal sheath to which the tube could be securely tied, the anchoring suture was passed between the fibres of the rectus muscle and made to pierce the



I believe there are cases on record where tubes have been cut and ligatured and the patients have still become pregnant. So it struck me that if I were to anchor the cut ligatured tubal ends outside the peritoneal cavity, I could by that means anchor up the prolapsed uterus and also render the chances of any ova wandering from the peritoneal cavity down

anterior rectal sheath and retained longitudinally between the same rectal fibres a few centimetres lower down and tied in that position. This obviated any strangulation of muscle. The right tube was similarly treated.

At this stage of the operation the fundus of the uterus was lying between the lips of the incision, I could not resist the temptation to

more firmly anchor it there by putting an additional suture through its anterior surface, and the adjacent fascial structures.

There was no difficulty in bringing the tubes out and anchoring them as described. The broad ligament was, of course, puckered against the edges of the incision where the tube coursed over the peritoneum beneath the rectus muscle into the pocket prepared for its end.

The peritoneum was then closed as best one could considering the fundus uteri was occupying a position between its edges in the lower part. The incision was closed in the usual way.

The after-course was uneventful, care was taken to catheterise the lady frequently for the first four days. The patient has since returned to England, but has promised to keep me informed of her progress. Her prolapse disappeared, and I think we can presume that there is very little likelihood of pregnancy again occurring.

Although naturally I have been more interested in surgery than in medicine, I think I can claim to have seen cases which would have waimed the heart of many a physician at home.

One day at my bungalow in St Thomas' Mount a man turned up who had been recommended to come to me by a practitioner in Secunderabad.

The following are some notes on his case which I diagnosed as disseminated sclerosis.

The cause of the diabetes is of course obvious, although I do not note disseminated sclerosis among the list of causes of diabetes given by Dr Garrud in his first *Lettsomian Lecture*, in account of which is contained in the *Lancet* of February 24th, 1912.

P. Murrage-an, Survey Pensioner, aged 68, seen on 20-1-12 when he came to me complaining of tremor and diabetes.

It appears that 7 years ago diabetes was diagnosed, for which he had since been treated by several doctors.

On carefully going into his case I elicited the fact that, on trying to do anything he had noticed a slight tremor of his left hand 8 years ago, i.e., about 1 year before diabetes had been diagnosed.

On enquiry he stated that on one or two occasions a temporary numbness on the front of his right leg had occurred, but he had never suffered from any paralysis, attacks of aphonia or diplopia.

Five months ago he began to get easily tired on walking, 3 months ago the tremor in his left hand became worse and about the same time he noticed that his left hand and arm became weaker, the right hand then began to tremble on exertion.

Present condition—Speech is not altered according to him, at any rate it cannot be called scanning although slow and deliberate. Says his facial expression has not altered, although to me it appears expressionless.

Writing altered about 1 year ago and now he cannot write at all unless he holds the writing hand firmly with the other and even then the

writing is unintelligible. Without this support on attempting to write his hand jumps all over the paper.

P. Murrage-an is well known

P. Murrage-an Muddiman

P. Murrage-an is well known

Pennance Don W 11 96

He is unable to feed himself

Alayin Mather Street

He is unable to feed himself.

Motor System—General weakness all over body.

Most marked weakness is noticed in left deltoid, left extensors of finger and wrist more so than in left triceps, biceps and flexors of hand.

Small muscles of hand not particularly wasted. Hand grasp on both sides weak. Legs although weak do not show any special weakness. Has severe intention tremor of both hands but much more marked in left hand.

Sensory System—Sensation as tested by touch, heat, cold and pain normal.

Reflexes—All lost.

No ataxia, no particular gait, on turning quickly he reels slightly, says he feels giddy.

Pupils react to light and accommodation are equal and normal. Nystagmus on looking to the right. No ocular symptoms. Bowels and bladder normal. No rigidity of body. No pain. Tremor only occurs on exertion being typically "intention."

The next case, in view of Heads' and Holmes' researches into sensory disturbances as delivered in the form of the Croonian lectures in June last, is particularly interesting. In the account of their researches they touch upon the effect of music on certain cerebral conditions and instance the case of 1 patient suffering from the "Syndrome Thalamique" in whom the characteristic so-called choreiform movements became so accentuated from listening to music as to seriously affect the patient.

The case under my observation was that of a lady I was called upon to visit in a certain station in India. When I saw her she was the age of 23 and had been married 3 years.

She was quite well until 2 months before her marriage when she had what appears to have been an epileptic fit. I could obtain no family history of epilepsy.

The first fit occurred when she was playing the piano. Since then whenever she has attempted to play the piano or has even only listened to music she gets a fit.

Although passionately fond of music she has had to give it up, as whenever she hears any music a peculiar sensation comes over her and she loses consciousness.

These fits appear genuinely epileptic as she bites her tongue, passes urine and feces.

I was consulted to see if anything could be done for her and found that she had never undergone a course of bromide treatment as she was afraid of taking bromides having been told that bromides sent people mad.

I could find no signs of any definite cerebral disease and put her on the following powder:

R	Pot Brom	gr	xx	} tds p c
	Picrotoxin	gr	1/100	
	Antim Arseniate	gr	1/150	

I might mention that her uterus was markedly retroverted. This I replaced and then I inserted a Hodge's pessary. I heard a month later from the lady who stated that she had had no fits during that time. But unfortunately I have since lost touch of her.

THE PSYCHO ANALYTIC METHOD OF TREATMENT OF THE NEUROSES

By OWEN BERKELEY HILL,

CAPTAIN, I.M.S.

HAVING waited in vain for five years in the hope of reading some article in the *Indian Medical Gazette* on the work of Professor Sigmund Freud, the present writer feels that it is high time that an attempt was made to attract wider attention in India to the psycho-analytic method of treating neurotic conditions, especially along those lines devised and elaborated by Professor Freud and his School of Psychiatrists. To what the lack of attention that has been shown to Freud's work in England is attributable it is very difficult to say, but there is little doubt that the English medical profession is frequently backward in adopting continental methods.

The introduction of spinal analgesia, to take a comparatively recent example, was greatly delayed in English practice, and, had it not been for Mr Arthur Barker of University College Hospital, it is conceivable that this very important branch of surgical technique might have been overlooked for an even longer period. That an immense success has attended Professor Freud's Psycho-analytic treatment of the Psycho-neuroses is amply evident to anyone who is at all acquainted with the literature of the subject, or who, like the present writer, has availed himself of the method when confronted with suitable cases.

I would like it to be understood, however, that it is not my intention to suggest that psycho-

analysis is a thing that can be utilised in general medical practice. A very laborious study is necessary before the technique can be acquired to an adequate extent and for this as well as for other reasons, which I shall refer to later, is unlikely that many practitioners in India will devote themselves to the study and exposition of this branch of medical lore.

All the writer hopes to achieve in this article is the indication of the outlines of Freud's teaching whereby it may become more generally known that (1) such a form of psychotherapy exists, and (2) how to recognise suitable cases for treatment on these lines.

Owing to the present state of medical education in Great Britain, there is no doubt that, on the subject of Psychology and Psycho-pathology, a great deal of ignorance exists, and exists to an extent that renders the profession at large helpless in the face of certain maladies that afford numberless triumphs to quacks, religious or otherwise. Indeed, it is very rare to find an ordinary practitioner who possesses any labels for pathological psychological conditions other than "Hysteria" and "Nervasthenia".

However, it is not the writer's intention to indulge in any discussion of this point, but in view of what follows he considers it not altogether out of place to call attention to it.

I have already referred to Freud's Psycho-analysis as being particularly suitable for the treatment of the neuroses, under which heading are included the real Neuroses, *i.e.*, Neurasthenia and Anxiety—Neuroses and the Psycho-Neuroses, *i.e.*, Hysteria and the Obsessional states.

The original experience of Freud which led him to modify and afterwards largely to re-construct his preconceived notions on the etiology of neuroses was a case of hysteria occurring in an intelligent young woman which was studied by an older colleague, Dr L. Breuer, in 1881.

Breuer found that the history of the patient's illness as disclosed by herself, although honestly and freely given, only represented a fraction of the story which was eventually extracted from her memory.

By making use of a special method of enquiry, since called by Freud "free association" the girl was induced to recollect an immense number of forgotten memories, mostly of a painful nature.

Gradually as one memory after another was evoked, the symptoms one after another slowly faded away never to return.

It is impossible to give the details of this now historic case so it must suffice to say that the conclusion was reached that the patient's childish experiences were largely responsible for her symptoms and that those of later life (regarded hitherto as the ostensible cause of her complaint) were discovered to owe a large portion of their power for harm to the fact that they reproduced in

* A letter dated 22nd April 1912 reports the patient in better health and "able to get to the piano again—but at times music still affects me."

the new shape old emotions, of which, before her treatment she would truthfully have professed herself to be entirely unaware

The physical signs of this case of hysteria consisted in a paralysis and contracture of the arm and a peculiar affection of the speech, signs quite common in hysteria

That the symptoms of hysteria are mental in origin was long ago pointed out by Janet, but Bleuer and Freud went more deeply than Janet and elaborated a most complicated and far-reaching theory of "Conversion" or "Substitution."

In normal persons the process of "forgetting" is mainly the repression of painful recollections, so that one may almost assume that the mind, as well as the body, has the power to protect itself against what is harmful to it, and accordingly painful recollections are rendered more or less inactive by a process of repression (*Verdrängung*) or by substitution

Memory therefore can be converted or neutralised but never abolished, so that it retains its capacity of exerting an influence later on

Now Freud assumes that every psychical function (memories, ideas, etc.) is associated with something which has all the attributes of a quantity, although it cannot be measured, and this he names the "Affective process" (*Affektbetrag*). This "Affect-betrag" can be increased, diminished, displaced, or carried off. It may be said to spread itself over the memory-traces of ideas rather like an electric charge over the body

He assumes further that it has the power of being released from the idea with which it was originally associated and this displacement of affect from one idea to another Freud calls transference (*Uebertragung*)

For instance, a girl transfers the affect properly belonging to the idea of a baby to a doll, treating a doll almost exactly as a mother would treat a child

Now an excessive accumulation of the psychical energy associated with the affective processes results in the formation of psychical tension and leads to the production of discomfort (*Unlust*). The discharge of the discomfort, on the other hand, produces pleasure and relief (*Befriedigungs erlebniss*)

Now this discharge may take place in a variety of ways or it may not take place at all—it becomes "repressed." This pent-up energy may, in its effort to escape, become linked to other mental processes or to physical ones

In the first case, the pent-up energy will be discharged if the mental processes to which it is linked are assimilable in consciousness (i.e. there is no reason to repress them out of consciousness), and this constitutes the mechanism whereby most obsessions and phobias are produced.

In the latter case, where the energy finds outlet in a somatic manifestation (termed by Freud a "conversion"), a typical hysteria is produced

In both cases the formation of the unusual associations which permit the circuitous discharge of pent-up psychical energy takes place outside consciousness, and the subject quite fails to apprehend the significance of the end manifestation or the connection between it and the primary process.

In other words, the victim of a psycho-neurosis is the host of non-absorbed mental processes lying in the main stream of consciousness

These mental processes may take the form of desires, wishes, or thoughts which cannot for various reasons be gratified but which the patient refuses to acknowledge as a true part of his personality

Instead of acknowledging their existence and trying to assimilate them he represses them.

To take an example:

Suppose that a married man develops an intense affection for another woman and is moreover conscious that the state of his feelings towards the lady are not only evident to her, but thoroughly appreciated by her.

In his despair of ever consummating his desire to obtain possession of the woman whose attractions outweigh those of his own wife the thought may occur to him that, if his wife were to die, all might go well

From dallying with this thought he may come gradually to half-wishing that his wife might die, or he may find that the otherwise natural association of grief with the idea of his wife's death is conspicuous by its absence

A normal man under these conditions would honestly recognise the existence of this wish in himself, but at the same time he would, of course, realise that for ethical reasons this wish must be abandoned

In a man of normal self-control and even moderately strong ethical principles this matter would not be difficult

With a neurotic, however, it is a different matter

He probably will not admit even to himself that he ever entertained such a notion for an instant.

He makes every effort to escape from it and to repress it

The repressed thought rapidly becomes uncontrollable and, being invested with a strong emotional tone, it forms a "complex"

This complex now takes on a separate existence, so to speak, but the manifestations of it are not recognised by the patient

If the conflict towards repression continues to develop and becomes thereby so intense, the disassociated complex may produce what is clinically recognised as a symptom, especially if the complex becomes associated with other

complexes already in existence, most of all, if those complexes originated in childhood

Freud assumes that every psycho-neurotic symptom is a distorted expression of a repressed wish—complex of an unacceptable and therefore unassimilable nature

The wish is concealed and the evidence of its concealment appears as a symptom. Immense variations may exist in the nature of the symptoms due partly to distortion and partly to its association with other split-off complexes

In tracing out and adjusting the symptoms to their correct complexes and thereby abolishing the state of tension that exists in the patient's mind lies the whole pith of Freud's psycho-analysis and the entire secret of the treatment and cure

We now come to the application of the method in practice, and in this connection I would like to call attention to the chief drawbacks of Freud's methods

First, to perform a psycho-analysis successfully the physician must feel sympathetically drawn towards his patient

Freud himself declares that he cannot do a psycho-analysis on a person in whose case or in whose personality he cannot feel some interest

Secondly, it is generally admitted that persons over fifty years of age are usually unsuitable for psycho-analysis, for at that age the mental processes are generally so "set" that the re-education which a psycho-analysis entails becomes an impossibility. Then with very stupid or very uneducated persons it is almost useless to attempt a psycho-analysis

The time spent to complete some psycho-analysis is often considerable, and in any case the work is very taxing to the physician

Freud relates a case which he saw every day for three years

This is, of course, very exceptional, the ordinary case may be usually dealt with in from 10 to 20 sittings

The patient must first be put on quite easy terms with his doctor

I begin by shortly explaining to the patient the rationale of psycho-analysis, and then get him to relate his history in his own words from the very beginning of the trouble, asking him to pay as great attention to detail as possible

It is striking how the history originally given differs from the complete history which comes to light subsequently

The next step is to apply the word-reaction association method as developed by Jung and then proceed with what Freud has termed "free association." Here I cannot do better than quote from Dr Ernest Jones' article entitled "Freud's Psycho-Analytic method of Treatment," published in May 1910 in "*The Journal of Nervous and Mental Diseases*"

Dr Jones writes — "In this method (*i.e.*, the word-reaction association) one or two hundred test-words are called out to the patient, who has to respond with the first word or phrase that comes to his mind. Certain peculiarities in the individual reactions reveal the existence of various complexes or trains of thought possessing a high emotional value, and these can then be followed and more fully investigated. The peculiarities in question are ten or twelve in number. The chief are undue delay in the reaction time, failure to respond at all, response by repetition of the test-word, perseveration affecting the succeeding reactions, anomalous elating associations, assimilation of the test-word in an unusual sense, and erroneous reproduction of the reaction when the memory for it is subsequently tested

"One next proceeds to actual analysis. The material for this consists of what is known in psychology as 'free associations,' and is obtained by asking the patient to relate in the order of their appearance the various thoughts that spontaneously come to his mind. It is essential for him to do this quite honestly, and fortunately we have several objective tests of his behaviour in this respect. As he has to play a purely passive part during this stage, his mind should be in a calm and equable state with all tension so far as possible relaxed. He must suspend his natural tendency to criticise and direct the flowing thoughts, and here lies one of the greatest difficulties, which must be further considered. The repressing force which has caused the morbid condition present, by driving various memories into the unconscious, constantly exerts itself to heap these memories unconscious and is now encountered by the physician in the form of what is called personal resistance. The obstinacy with which many patients seem instinctively to cling to their symptoms is generally recognized, though it is often wrongly interpreted as indicating mere wilful perverseness. The patient's resistance may manifest itself in a number of different ways, of which I can here mention only a few of those met with in the course of psycho-analysis. Thus instead of relating his thoughts as they occur to him, in the way he has been told, he will omit many on the ground that they are apparently irrelevant, unimportant or nonsensical. If a patient relates a thought only after a long struggle with himself, and then excuses himself on the ground that it had nothing to do with the subject or was too unimportant to mention, one can be sure that in reality it is an important link in the chain that we are endeavoring to trace. The patient may omit other thoughts because they are of a painful or unpleasant nature, but here again these are frequently of great import

"During the analysis much valuable information can be obtained by a trained observer from

the study of various unconscious actions, slips of the tongue, symptomatic movements, etc., on the part of the patient. These frequently reveal the automatic functioning of some repressed train of thoughts. The most essential part of the analysis, however, is the investigation of the patient's dreams by means of the special technique introduced by Freud. The study of dreams is in this connection of supreme importance, for of all the means at our disposal it is the one that best enables us to penetrate into and understand the most hidden parts of the mind. No one can be competent adequately to use the psycho-analytic method who has not made a thorough study of Freud's 'Traumdeutung,' and learned how to apply in practice the principles there laid down. Freud has shown that dreams represent an imaginary realization of various wishes that in daily life have undergone repression. In dreams all our hopes and wishes come true, and it sometimes happens, as Brill has pointed out, that the wish is so strong that later on the dream itself is made to come true, an event which is an interesting source of superstition. In most cases the gratification of the wish is so distorted in the dream that the subject is quite unaware of the significance of it. One can in many respects draw a close analogy between dreams and psychoneurotic symptoms. They both represent the unconscious gratification of wishes that from their unacceptable nature have been repressed by the patient, both are distorted and unrecognizable manifestations of wishes that are struggling to find expression in an indirect form, with both the psychological mechanism by which is brought about the distortion that allows them to evade the censor are often identical, and in both cases the actual wishes are frequently of precisely the same nature. The interpretation of a dream by psycho-analysis thus often gives the clue to the solution of a given set of symptoms, as Freud has cleverly shown in his "Bruchstück einer Hysterie-Analyse."

"We may now shortly consider a few illustrative examples. A common form of compulsive-neurosis (Zwangs-neurose) is that in which the patient has an almost continuous impulsion to wash his hands. With this may be the obsession that the hands are soiled, contaminated or even infected, or the phobia that the hands may get contaminated or infected (one form of nosophobia). The morbid desire for cleanliness, called by the Germans the *Reinigungs-neurose*, may extend so far as to involve the whole body, or, in the case of women, the house as well, a not infrequent source of domestic discomfort. This symptom produces a lively impression of meaninglessness or even of foolishness, and is certainly hard to understand until one begins to analyse the nature and origin of it. A direct clue to the significance of it as to that of many other

neurotic symptoms, was given three hundred years ago by Shakspeare. He describes how Lady Macbeth has the "accustomed action" of rubbing her hands together, as if washing them, for a quarter of an hour at a time, and, appropriately enough, the patient furnishes the key to the riddle by disclosing her secret thoughts in her sleep. "What, will these hands ne'er be clean? Here's the smell of the blood still! all the perfumes of Arabia will not sweeten this little hand." This is a beautiful instance of how a symptom may come about through the subject gratifying a wish connected with one subject, which is unpleasant, by transferring it to an indifferent one. Lady Macbeth imagines that she is washing away a stain from her conscience, whereas really she is only washing away a fictitious one from her hands. Shakspeare completes the picture by making the doctor say, "This disease is beyond my practice," and until the epoch-making work of Freud fifteen years ago no doctor could but agree to the remark. The example in question also well illustrates a common objection raised to the explanations that psycho-analysis gives to many symptoms, namely, that they seem so illogical. This is true, but it must be remembered that the mental processes that go to form such symptoms are themselves illogical. The mental processes of early childhood, of savages, and of the unconscious activities of civilized adults are of a low order, and do not follow the same rules of logic as do the waking conscious processes that we are accustomed to. It might be said of the present example how could anyone confound a concrete object such as a hand with an immaterial object such as a conscience? The two objects, however, have in common this important attribute, that both can receive stains which can be washed away, and to a person in whom the desire to wash away stains has attained a raging intensity—all objects to which the desire can be applied seem of one kind. They are classed together, and unconsciously are often confounded with each other, or even fused in one. One might say that to such a person it becomes irrelevant what is washed clean of its stain so long as something is. It is the same in any acute emergency of life, when the desire to act in some way or other is so strong that the wildest, most illogical deeds are performed in order to satisfy that desire.

As Dr J J Putnam has so clearly shown in his interesting contribution to the "Journal of Abnormal Psychology" the part of Freud's psychology which has called forth such opposition is his attitude towards the rôle played by the sex instinct and especially that of early childhood.

There can be no doubt that this aspect of Freud's teaching has evoked an immense amount of criticism of a decidedly hostile kind and has

warped the reasoning of many men otherwise of fair judgment

Dr Putnam writes—"No doubt in many persons' minds the word sexual connotes "sensual" and to speak of sexual influences as being of fundamental importance for psychopathology is equivalent to imputing immorality to the fine, intelligent men and women whose experiences might be at stake" Now there is not the slightest doubt that morbid sexual tendencies are not at all uncommon, so that to those who condemn Freud and his school for insisting on their importance one can only reply in the words of St Augustine—"If what I have written scandalises any prudish person, let them rather accuse the turpitude of their own thoughts than the words I have been obliged to use."

In conclusion, let me quote a short extract from an American review of Dr George Savage's Harveian oration for 1909—

"The aim of this oration—to dispel the conservatism that befalls the British medical mind, is certainly commendable. The substance of the address, however, is rather meagre. In the treatment of experimental psychology no distinction is made between the abnormal and the normal branches of the science. No mention is made of the many facts established by the researches of Bernheim, Binet, Janet, Freud, Prince, and Sidis in the one field, or of Wundt, James, Ebbinghaus, Lange, Munsterberg and Titchener in the other. All that we find are a few matter of fact statements about the privacy of one's mental states or the fundamental unity of the sensations, which statements, in addition to being commonplace, are so scant in content as to total, but four out of the forty-four pages that comprise the printed copy of the oration. The section on hypnotism, though more extensive than the one on experimental psychology, is largely historical or generally descriptive in nature. Dr. Savage endeavours to emphasize the therapeutic importance of hypnotism. But so embryonic does the development of psycho-therapy in Great Britain seem to be that he appears to regard hypnotism as the sole psycho-therapeutic agent. He shows no familiarity with Freud's psycho-analysis or with Sidis's hypnoidal treatment. And the cases he cites are for the most part the ones that the average Continental and American psycho-pathologist meets in his ordinary experience.

The condition of psycho-therapy in Great Britain, judged by this oration, is little short of deplorable. It is not that Dr. Savage is not sincere and open-minded enough. The difficulty is with the rank-and-file of the profession who are so conservative that a Harveian oration must degenerate into a plea that scientific men should not reject new truth, simply because it is new.

May his sincerity fertilize the sterile soil upon which he has sown rather unpromising seed"

A Union of Hospital Practice.

CASE OF CÆCUM & APPENDIX IN LEFT INGUINAL HERNIA

By F. F. STROTHER SMITH,

CAPTAIN, I.M.S.,

Rawalpindi

WHILE at Amritsar in November last I was performing some operations and incidentally came across the following case which I think is worth reporting.

"Chinag Din, aged 1½ years, admitted on the 13th November 1911, suffering from left inguinal hernia. After the usual preparation I operated on him on the 14th inst, and on opening the sac found the cæcum and appendix in it. My attention was drawn to it by the appendix lying on the front of the cæcum. After reducing the contents of the sac, I was able to follow them up through the internal ring, but was unable to push the cæcum across to its normal position. The sac was pulled well down and ligatured at its neck and pushed well back into the abdomen. The canal was closed in the ordinary way. The wound treated by 1st intention and the child was discharged cured on the 29th November 1911.

The above is the first case I have seen in a child. Two years ago I had a similar case in an adult male, which I operated on at Multan.

NOTE.

THE Secretary of State has sanctioned the addition of the appointment of Medical Officer, Seristan Agency, to the Cache of the I.M.S.

We take this to be an indication that the embargo of the "Morley doctrine" may in time be removed. Circumstances alter cases.

NOTICE

MANY articles have been held over owing to the special nature of this issue. *ED—I.M.G.*

Indian Medical Gazette

JUNE

OUR SPECIAL I M S NUMBER

At the time of the visit of Their Majesties King George and Queen Mary to Calcutta in January 1912 the question was asked by one high up in authority what has the Indian Medical Service done for India? At the time there was but little difficulty in giving a short answer to the question, and later Sir R Havelock Charles, G C V O (not the least distinguished of the many I M S names whom we have chronicled in these pages), made the suggestion that the *Indian Medical Gazette* might fitly answer this question, and this with the ever ready and invaluable assistance of Lt-Col D G Crawford, I M S (ret'd), we have endeavoured to do

During the thirteen years in which the present Editor has presided over the destinies of the *Indian Medical Gazette*, it has been his constant endeavour to publish all and everything bearing on the history of the old and distinguished service to which he has the honour to belong—witness the many historical articles which have from time to time appeared in these pages, many of them from the ever-willing pen of Lt-Col Crawford whom we have mentioned above

We have always been strongly of the opinion that a generation which takes no pride in the achievements of its predecessors is little likely to do much that its successors can admire. We have in many previous issues shown the great and beneficent work done by our service in India and the following summary will show in what respects that work has been accomplished. To many of us service men much in the following pages is familiar, but it is right that the Government and the peoples of India should know how much they are indebted to the Indian Medical Service. *Quæ regio in terris nostri non plena laboris?*

It will hardly be said that a service which has produced men like those mentioned below has not been of great use to the peoples of India.

Surely India and the peoples of India have been benefited by a service which *in addition to every-day work in peace and war* has produced men like—Koenig, Roxburgh, Heyne, the two Wallich, King and Prain in the region of botanic research—men like Russell, Day and Alcock in zoology and in the development of the fisheries of India, or

men like Falconer and McClelland, the pioneers of geological discovery which has done so much for the later development of the commerce and industries of India

Surely the work in economic science of Royle, Birdwood, Balfour, Shortt and Waring has benefited India in many directions? India, too, has reason to remember with pride the names of Leyden, Balfour, Gilchrist, Horace Hayman Wilson, G A Herklots, and Aloys Spenger, who have done so much for her ancient languages and literature. The frontiers and remote places of the Indian Empire have been explored by I M S officers such as Buchanan-Hamilton, J Fryer, P Lord, Griffith and Bellew, and satisfactory relations established by the medical skill and scientific knowledge of these men

In the realms of pure medicine and surgery men of the service have done good work, not only in the every-day round of practice but in research and medical discovery. Long before the boom in tropical diseases which dates from the nineties men like Twining, Ranald Martin, Allan Webb, Joseph Fayrer, Macnamara, Edward Hare, Norman Chevers, Vandyke Carter, and many others laid the foundations of tropical pathology and the torch has been handed on to no unworthy hands, witness the work done in the present generation by Macleod, Freyer, Keegan and Henry Smith in surgery, Ronald Ross, Lamb, Christophers, Liston, Patton, Donovan, and Leonard Rogers in modern research

Nor must the sanitation of our jails be forgotten. In no department of public health has the advance been so marked. The death-rate among prisoners in the early years of the nineteenth century was nothing short of terrible. When Dr F J Mouat was appointed Inspector-General of Prisons in Bengal the death-rate per annum amounted to no less than 138 per mille of the average strength in the year 1864. That eminent sanitarian inaugurated a new era in prison administration and the following table shows the remarkable progress that has been made under his successors in that office —

Years	Death rate per mille
1875-79	65
1880-84	61
1885-89	44
1890-94	36
1895-99	26
1900-04	26
1905-09	21
1910	18
1911	17

A fall in the death-rate from 138 to only 17 per mille in little over half a century is a remarkable achievement, scarcely (if ever) paralleled in the annals of sanitation in the tropics

These figures relate to Bengal Jails only, but had we time we could have produced equally satisfactory figures for every other Province in India. No more successful change in administration has ever been made than that which handed over the care of the jails in India to the hard worked medical officers of the Indian Medical Service in civil employ.

WHAT THE INDIAN MEDICAL SERVICE HAS DONE FOR INDIA

From time to time the question has been propounded, what has the Indian Medical Service done for India? And it has sometimes been made a complaint against the members of the Service that they have done little, or have not done enough, research work in medicine, especially in tropical disease. The present time appears to be appropriate for an attempt to record what the Service, through the agency of its members, has done, during the past two centuries, towards the improvement of administration, the advancement, and, indeed, the introduction of the treatment of disease in India, the extension of economic projects, in short, the amelioration of the conditions under which the great majority of the population of the country live and move and have their being. In the subjoined account of what has been achieved in India by members of the medical profession, employed and paid by Government for the public service, there is nothing new. All of it is, or should be, well known. It has all been said a dozen times before. But in India memories are short, individuals rapidly pass away, to Europe or to a more distant bourne, and it may be well to tell the old tale yet once more.

In order to justify the maintenance of a Medical Service, it is not necessary to show that it has gone beyond the sphere of daily duty. If the members of that Service have, with few and rare exceptions, honestly carried out the duties entrusted to their charge, that seems to us sufficient. That they have done this much, even the detractors of the Service would hardly deny. In many a desolate frontier outpost, in many a dismal little civil station, they along with their fellow-servants, civil and military, have carried on their daily work, in most cases without expectation of any further reward than their fixed and regular pay. They have laid down their lives by scores in "plague, pestilence, and famine, in battle, murder, and in sudden death." But we hope to show that, in every generation, some members of the service, at least, have done much more than their ordinary duty, and have materially contributed to the advancement of knowledge,

or to the advantage of the country of their adoption. In so doing, a few have attained to fortune, a somewhat larger number to some degree of fame. Most have gained little for themselves, beyond the consciousness of duty done.

BOUGHTON AND HAMILTON

The names of two members of the Medical Service, BOUGHTON and HAMILTON, stand out prominently in the early story of British India, as recorded by legend, and even by sober writers of history. Orme's *Military Transactions* and Stewart's *History of Bengal* both relate how Gabriel Boughton, Surgeon of the *Hopewell*, was sent from Surat to the Court of the Emperor Shah Jahan, how he cured the Mogul's daughter, and how, as his reward, he obtained permission for his employers, the East India Company, to establish factories in and to carry on trade with the province of Bengal. William Hamilton accompanied the mission or Embassy sent, under John Surman, by the Bengal Council to Delhi in 1714-1717. He cured the Emperor Farakh Siyar of a complaint which had delayed his marriage. It is said that, when asked to have his own reward, he requested the Emperor to grant the petitions of the Embassy, for trade free of duty, for a charter giving them the lands of Calcutta and the surrounding country and for some other privileges of less importance. Unfortunately, these legends, in both cases are considerably exaggerated, as recent research has proved. Gabriel Boughton, Surgeon of the *Hopewell*, was certainly sent from Surat to Agra early in 1645, and appears to have been in favour at Court. He accompanied the Emperor's second son Shah Shuja Viceroy of Bengal, to his provincial capital at Rajmahal, and died there before 1657. He does not appear to have had any share in the cure of the Emperor's daughter, Princess Jahanaara, or to have got any charter from Shah Jahan. It seems probable that he did get some sort of charter for English trade in Bengal from Shah Shuja. In Hamilton's case, the only exaggeration is, that he obtained the grant of the Company's requests, as a reward for his cure of the Emperor. He was richly rewarded for his services, but there is no record of his having been told to name his own reward, or indeed of his having asked for anything at all. Still it can hardly be doubted that Hamilton's successful treatment of the Emperor had the result of bringing himself in the first place, and with him the whole *personnel* of the English mission into high favour at the Mogul Court, and thus inducing Farakh Siyar to view the requests of the mission with favour, and, as he eventually did, to grant them in full.

It is not necessary, for our present purpose, to lay stress on these old world stories. The services of Boughton and of Hamilton were rendered to the Company, and to England not to India, except in so far as the opening of a more extended market for their produce may be said to have been an advantage to the mercantile and trading

classes in Bengal. At the same time, both helped to lay the foundation of the British dominion in India, and no greater benefit than that has ever been conferred by one country upon another.

What we now attempt is to enumerate the contributions made by members of the I M S towards advance in every respect in our Indian Empire. If the result appears to be somewhat in the nature of a mere catalogue, or list of names, this is due to the large number of individuals whose services require mention. To describe the careers and work of these individuals in detail would require not an article, but a book.

It will be convenient to recall the services rendered under various heads, though the names of many men appear under more than one of these headings, which may be classified as follows *

- 1 Introduction
- 2 Medicine and Surgery
- 3 Medical Education
- 4 Travel and Exploration
- 5 Natural Sciences and Economics
- 6 Philology, Ethnology, Literature
- 7 War Services etc

II MEDICINE AND SURGERY

In the purely professional work of surgery and medicine, progress, especially during the last half century, has been very rapid. Modern surgery, indeed, is the creation of the last forty years. The advanced Pioneer of his own generation is out of date in the next. The most up-to-date professional book is soon superseded by other which include later discoveries, and remains known only to those interested in antiquarian research. The most successful practitioner who has not perpetuated his knowledge and opinions in published writings, is soon forgotten, or at best remains merely a name. How many men in the I M S ever heard of SIMON NICOLSON (B 1807)? Yet Nicolson was in his time the most successful and popular physician in Calcutta, probably the best physician, according to the lights of his time, who ever laboured in India. Nicolson was born in Kincardine in 1778, educated at St. George's, where he was House-Surgeon and Assistant to Sir Everard Home, entered the I M S on 2nd February 1807, and, except for one furlough to the Cape, spent the rest of his service and the rest of his life in Calcutta, first as Assistant in the General Hospital, then as Superintendent of the Native Hospital, and from 1835 to 1855 as Superintendent of the General Hospital. He retired on 1st August 1855, and died in Calcutta, seven days later, on 8th August. He left no published work behind him. Even THOMAS EDMONDSTONE CHARLES (B 1856), who retired barely one generation ago, on 18th September 1882, and died so recently as 2nd March

1906, though he was for some twenty years the leading physician in Calcutta, is hardly remembered.

An account of those who, in their time, made their mark in India as Surgeons and Physicians, is therefore little more than a mere catalogue of books, now for the most part forgotten, but some of which were the most widely read and most useful works of their time, to the medical man in India.

That officers of the I M S have always been found to keep abreast of, and in some cases well ahead of the professional knowledge of their time, can be easily proved. In Tropical medicine we need only mention the names of HENRY VANDYKE CARTER (Bo 1858), of SIR RONALD ROSS (M 1881), whose great discovery was made while he was still on the active list, and of LEONARD ROGERS (B 1893), whose work on Indian fevers and on cholera is second only to that of Ross, with many others whose labours, though less widely known to the public, have contributed hardly less to the general advance in knowledge. Surgeon-General WILLIAM BURNS BANNERMAN (M 1883), CHARLES DONOVAN (M 1891), the late Major GEORGE LAMB (B 1894), and, among the younger generation, WILLIAM GLEN LISTON (1898), and SAMUEL RICHARD CHRISTOPHERS (1902), to name only two out of many. In surgery, PETER JOHNSTON FREYER (B 1875), is well known for his great work in litholapaxy in India, and since his retirement as the originator of the modern operation of excision of enlarged prostate, and HENRY SMITH (B 1890), by his introduction of the operation of extraction of cataract in its capsule, has made the name of his station, Jalandhar, known throughout the world.

To give a complete list of the works written by members of the I M S would take up more than a whole issue of the *Indian Medical Gazette*. We propose to quote only a small fraction of the whole, the most important and the most popular in their day. In many cases the respective authors wrote far more than the few books whose names are given.

Medicine—JAMES LIND (B 1771), was the author of a work on *Tropical Diseases* which, though utterly forgotten now, was the standard text-book of its time, and reached a sixth edition in 1808. JOHN PETER WADE (B 1783), wrote much on the same subject, his chief work being one on *Fever and Dysentery*, three volumes, London, 1791-93. SIR WHITELAW AINSLIE (M 1788), wrote *Materia Medica of Hindustan*, Madras, 1813, afterwards expanded into *Materia Indica*, two volumes, London, 1826. SIR JAMES ANNESLEY (M 1799), was the author of *Sketches of the most prevalent Diseases of India*, two volumes, London, 1825, subsequent editions in 1828 and 1841, a work considered so valuable that for many years it was compulsory for every medical officer, before entering the service, to provide himself with a copy. *Essays on Diseases of Indian Seamen and Lascars*, Calcutta, 1804, by WILLIAM

* The initials and date in brackets after each name give the Presidency and year of entry to the Service.

B Bengal Medical Service
M Madras Medical Service,
Bo Bombay Medical Service

HUNTER (B 1783), was for long a standard work reaching a second edition in 1824. Another work of great popularity was *Influence of Tropical Climates on European Constitutions*, London, 1841, by SIR JAMES RANALD MARTIN, (B 1817), which was the sixth edition, greatly enlarged and entirely re-written, of a previous work by Surgeon James Johnson, R.N. The works of WILLIAM TWINING (B 1825), *Clinical Illustrations of the more Important Diseases of Bengal*, Calcutta, 1832, and *Epidemic Cholera*, London, 1833, may still be consulted with advantage, as may *Pathologia Indica*, published in 1848, by ALLAN WEBB (B 1835). CHARLES MOREHEAD (Bo 1829), wrote *Clinical Researches on Diseases in India*, two volumes, London, 1856, a most valuable text-book. The earliest work which can be said to be in popular use at the present day,—probably most medical officers and many others, official and private, possess a copy,—is *The Management and Treatment of Children in India*. This work was first published in 1844, a tiny volume, privately printed, with the title *Hints on Children in India*, by HENRY HURRY GOODEVE (B 1831). The fourth edition was edited by S. C. G. CHUCKERBUTTY (B 1855), the sixth by J. EWART (B 1853), in 1872, the seventh by E. A. BIRCH (B 1866), in 1879 and a new Edition is now in the press, edited by Lt-Col C. R. M. GREEN, I.M.S., F.R.C.S. Goodeve's name has long ago been dropped, but Birch's fourth edition, 1902, is really the tenth edition of Goodeve's little handbook, *The Manual of Family Medicine for India*, by Surgeon-General SIR WILLIAM MOORE (Bo 1852), first published in 1861, has run through many editions, the seventh and latest, edited by J. H. TULL WALSH (B 1884), in 1903. Surgeon-General WILLIAM CAMPBELL MACLEAN (M 1838), in 1886 published his *Diseases of Tropical Climates*, founded on his long experience in India and as Professor of Military Medicine at Netley. Written before the modern scientific development of tropical medicine, entirely from the clinical point of view, it is now obsolete, but remains, from its lucidity and style, one of the most readable professional books ever written. *The Annals of Cholera*, published in 1872 by JOHN MACPHERSON (B 1839), and *The History of Asiatic Cholera*, London, 1876, by N. C. MACNAMARA (B 1854), contain a mine of information on the subject of that disease. *The Treatment of Remittent Fever and Dysentery*, published at Delhi in 1847 by EDWARD HARE (B 1839), put forward new views on these common and fatal diseases. *The Commentary on the Diseases of India*, London, 1886, by NORMAN CHEVERS, gave the matured opinions of an author of long Indian experience.

HENRY VANDYKE CARTER (Bo 1858), was about the first in India to apply modern methods of scientific research to the investigation of tropical diseases. The chief of his many works are *Mycetozoa*, 1874, *Leprosy and Elephantiasis*, 1874, and *Spirillum Fever*, 1882, the last a subject worked out by himself. Carter, by the way, had

a considerable share in the production of the most popular of all professional text-books, *Gray's Anatomy*, contributing 363 drawings to the first edition, for which he also made the dissections jointly with Henry Gray.

A few more modern books may also be enumerated. *The Prevention of Disease in Tropical Campaigns*, by ANDREW DUNCAN (B 1878), which won the Parke's Memorial Prize in 1885, *Treatise on Plague*, by G. S. THOMSON (Bo 1888), *Blood Stains*, by W. D. SUTHERLAND (M 1890), and last but far from least, the important works on *Fevers in the Tropics*, and on *Cholera and its Treatment*, by LEONARD ROGERS (B 1893).

Under the head of medicine we must not leave out works on a special branch, forensic medicine. CHEEVERS' great work on *Indian Medical Jurisprudence* is still the standard work on its subject, though somewhat out of date, and very hard to get, now partly superseded by the later works published by I. B. LYON (B 1865), in 1889,* by T. D. C. BARRY (Bo 1887), in 1902-03, and by J. B. GIBBONS (B 1881), in 1904.

Though published long after they had left the I.M.S., we may also mention the works of CHARLES MURCHISON (B 1853), on *The Continued Fevers*, 1862, and on *Diseases of the Liver*, 1867, the *Treatise on the Science and Practice of Midwifery*, by W. S. PLAYFAIR (B 1857), another most popular text-book, which went through nine editions between 1876 and 1898, and the works on his speciality, insanity, by W. W. IRELAND (B 1856), *Idiocy and Imbecility*, 1877 and 1898, *The Blot on the Bram*, 1885, and *Through the Ivory Gate*, 1889.

The list of important surgical works is not so long as that of those on medicine, but the following deserve mention. *The Principal Surgical Diseases of India*, 1840, by F. H. BRETT (B 1825), *Diseases of the Jaws*, by R. O'SHAUGHNESSY (B 1841), *Clinical Surgery in India*, 1866, and *Clinical and Pathological Observations in India*, 1873, by SIR JOSEPH FAYRER (B 1850), *Diseases of the Eye*, 1866, fifth edition, 1891, and *Diseases of Bone*, 1878, third edition, 1887, by N. C. MACNAMARA (B 1854), *Operative Surgery in the Calcutta Medical College Hospital*, by K. MCLEOD (B 1865), *Litholapaxy*, 1887, and *Rhinoplastic Operations*, 1900, by D. F. KEEGAN (B 1866), several small works on *Cataract* and on *Eye Diseases*, by G. C. HALL (B 1872), and the works on *Stone and on Enlargement of the Prostate*, by P. J. FREYER (B 1875), *Litholapaxy*, first published in 1885, with subsequent revised and enlarged editions in 1886, 1896 and 1900, *Structure of Urethra and Enlargement of the Prostate*, first issued in 1901, with subsequent editions in 1902 and 1906, and *Surgical Diseases of the Urinary Organs*, 1908.

A few recent works by men, most of whom are still serving, may also be mentioned, *Ophthalmic*

* 4th Edition Edited by Lt Col W. A. Waddell C.B., C.I.E., I.M.S., in 1909.

Operations, by F P MAYNARD (B 1887), *Cataract Extraction*, by H HERBERT (B 1887), *The Treatment of Cataract*, by Henry Smith (B 1890), and *Aseptic Surgery*, by A E R NEWMAN (B 1893)

Before leaving the subject of purely professional work, we must refer to the influence exerted by certain members of the service, especially on the North-West Frontier, through their successful work in hospitals and dispensaries. It was once said of H W Bellew that his presence on the frontier was worth two regiments to the Government.

III HOSPITALS MEDICAL EDUCATION, SANITATION

Before the end of the seventeenth century, the East India Company that started hospitals at Bombay and Madras, and a few years later in Calcutta, for their soldiers and seamen. From these hospitals have gradually developed the great General Hospitals in the Presidency towns. Hospitals in these cities, for natives, other than sepoys, were first started about a century later, by public subscription, aided by large grants from Government, and in Bombay especially the hospitals have owed a great deal to the philanthropy of wealthy Indian gentlemen.

In the mofussil it was not till some years later that hospitals or dispensaries for the general public were opened, chiefly between 1830 and 1840. In almost all cases, these hospitals owe their origin to the professional zeal of energetic Civil Surgeons, who collected money to maintain such hospitals, and gratuitously gave their services to them, long before Government had recognised any obligation on their part to take up the work of medical provision for the masses. Now, of course, the Civil Surgeon's professional work in and supervision of the hospital at the headquarters of his district, is part of the regular work for which he draws his pay. Eighty years ago, no such work fell among his duties.

MEDICAL EDUCATION

Medical education in India again owes its origin, almost entirely to the I M S. The first attempts at professional education were made in 1812, when boys were appointed to the hospitals in Calcutta and Madras to be trained for the Sub-Medical Service. But this training was given to Europeans and Eurasians only, and was solely for the benefit of the army. The first school for native doctors was established in Calcutta in 1822. This also was for the benefit of the army alone. The Medical Colleges of Calcutta and Madras were founded in 1835, that of Bombay ten years later, in 1845. They were founded to give a medical training superior to that of the army native doctors, to Indian youths, for the future benefit of the civil population.

The Medical Colleges, of course owe their origin to Government. They have always cost the State very large sums both in capital outlay and in

recurrent expenditure. Government alone, therefore, could have originated them. But from their foundation up to the present day they have been officered almost entirely by members of the I M S. The training provided has been given by officers of the I M S. And it is owing to the fact that this education, this training, given by I M S men, has been so thorough and so practical that the claim of the pupils for more complete recognition, for a larger share in the Medical Service of the country, has now become so pressing.

SANITATION

Sanitation has been, almost entirely, the work of members of the I M S. The first efforts in this direction were made by Holwell. JOHN ZEPHANIAH HOLWELL was born in 1711, in Dublin, educated at Guy's, and came out to India as Surgeon of an Indiaman in 1732. In July 1749 he was appointed one of the two Surgeons of Calcutta, but resigned and went home in 1750. In 1752 he returned to Calcutta as twelfth in Council and *Zamindar*, an office corresponding roughly to those now held by the Chairman of the Corporation and Commissioner of Police. In this year he took a census of Calcutta, when the population was reckoned as 409,000, probably much over-estimated. In 1755 he had the great tank, which then afforded the water-supply of the settlement, re-dug and enclosed, and prohibited the washing therein of people and clothes. This was the large tank, the *Lal Dighi*, which now occupies the centre of Dalhousie Square. At the siege of Calcutta, in 1756, after Drake, the Governor, had fled to the ships, he took the command of the garrison, and after the surrender was one of the twenty-three survivors of the Black Hole. Had Holwell held the command from the first, there would probably have been no surrender, and no Black Hole tragedy. He went home in 1757, and returned in 1758, and, after Clive's departure for England, acted as Governor from 28th January to 27th July 1760. Retiring on 29th September 1760, he left for England in March 1761, and lived at home for thirty-seven years, dying at Pinner on 5th November 1798.

From Holwell's time, a century and a half ago, to the present day, all the advance in sanitation which has been made in India has been due to the strenuous advocacy of officers of the I M S. That, while much has been done, much more remains to be done, no one would for a moment deny. Less than half a century has elapsed, since the Sanitary Department first came into existence in India, even in Europe it is not much older. But the advance in sanitation in India, as elsewhere, is now much more a question of available expenditure than of knowledge.

IV TRAVEL AND EXPLORATION

We may begin by mentioning briefly the names of GEORGE STRACHAN (Bo 1619) who has taken into the service of the Company's factory at Ispahan after making his way overland to Persia,

and spending some years in the service of an Arab Chief, and of JOHN FRYER (Bo 1672), author of one of the best known early works on travel in the East. Coming to more recent times, the first name we must record is that of ALEXANDER HAMILTON (B 1773), who accompanied George Bogle on his mission to Tibet in 1774, and was thus one of the first Englishmen to visit the forbidden city of Lhasa, a city which only one other of their countrymen had reached before the expedition of 1904. Subsequently in 1776 and 1777, Hamilton was twice sent on missions to Bhutan. ROBERT SAUNDERS (B 1782), accompanied Captain Samuel Turner's mission to Tibet in 1783-84, they, however, never reached Lhasa. ADAM FRÈRE (B 1781), who had served at Aleppo previous to entering the I M S, went with Colonel Kirkpatrick's mission to Nipal in 1792-93. FRANCIS BUCHANAN (B 1794), afterwards better known as BUCHANAN-HAMILTON, accompanied Captain Knox to Nipal in 1802-03, and published an account of Nipal in 1819.

Buchanan, however, achieved more important work in his detailed surveys of Mysore, Kanara, and Malabar, carried out in 1804-06, and of Northern Bengal and Bihar, from Rangpur to Gorakhpur, from Nipal to Gaya, done in 1807-1814. Both of these surveys have been published, and both remain standard works to this day.

JAMES GILBERT GERRARD (B 1814), accompanied Captain (Sir) Alexander Burnes in his first journey through Central Asia in 1832-33, visiting Kabul, Balkh, and Bokhara, and returning by Teheran, Ispahan, Shiraz, and Bushne. Gerrard helped in compiling the scientific part of Burnes' book on his travels. He died at Subathu on 31st March 1835, too early to participate in Burnes' subsequent successes or in his fate. PERCIVAL BARTON LORD (Bo 1834) went along with Sir Alexander Burnes on his commercial mission to Kabul in 1836, and in 1838 was appointed one of the Political Assistants to Sir Alexander, then Resident at Kabul. Stationed on the Uzbek frontier, Lord fell in the disastrous battle of Parwan on 2nd November 1840. Another Bombay officer who lost his life in much the same regions, much about the same time, was FREDERICK FORBES (Bo 1832) who was murdered by Ibrahim Khan, Chief of Seistan, in that province, some time in September 1841.

Two Botanical travellers, at about this time, were WILLIAM GRIFFITH (M 1832), and THOMAS THOMSON (B 1839). Griffith, in 1839, went with Wallich and McClelland on an expedition to explore Assam, returning through Ava and Rangoon. In 1838 he accompanied Major Pemberton's Embassy to Bhutan. In 1839 he served with the Army of the Indus, and went over the Hindukush to Khorasan, collecting plants. In 1842-44 he filled the post of Superintendent of the Calcutta Botanical Gardens. He died at Malacca on 11th February, 1845. His works, all on Botany, were published in Calcutta after his death, edited by McClelland, *Icones Plantarum Asiaticarum*, 1847-

1851, *Itinerary Notes*, 1848, *Palms of British East Indies*, 1850, and *Notulæ all Plantas Asiaticas*, 1851. Thomson also served in the first Afghan War, and was taken prisoner at the fall of Ghazni in March 1842. In 1845 he went through the Sutlej campaign. In August 1847 he was appointed one of the Commissioners for defining the boundary between Kashmir and Tibet. In 1850 he travelled with Sir Joseph Hooker through the Khasia Hills, Kachai, Chittagong, and the Sundarbans. He went to England in 1851, and worked at Kew in 1851-54. In the latter year he succeeded Falconer as Superintendent of the Calcutta Botanical Gardens, and held that post till 1861, when he went home again, returning on 25th September, 1863. He died on 18th April, 1878. He described his travels in a book entitled *Western Himalaya and Tibet*, London, 1852, and was joint author with Hooker of then *Flora Indica* published in 1855.

HENRY WALTER BELLEW (B 1855), had served in the Crimea before he entered the I M S. During the mutiny he was with the Lumisdens at Kandahar. In 1871 he accompanied Sir R. Pollock's Mission to Seistan, and afterwards joined Sir T. D. Forsyth's mission to Kashgar and Yarkand. During the second Afghan War he served as Chief Political Officer at Kabul in 1878-79, but had to leave on account of ill-health, being succeeded by Sir Lepel Griffin. After serving as Sanitary Commissioner of the Panjab, he retired on 14th November 1886, and died at Farnham Royal on 26th July 1892. The list of his works is long. He wrote accounts of the many missions on which he had served, a *Political Mission to Afghanistan* in 1857, London, 1862, *The Mission to Seistan*, Calcutta, 1873, *From the Indus to the Tigris*, London, 1874, *Kashmir and Kashgar*, London, 1875, *History of Kashgaria*, Calcutta, 1875, *Afghanistan and the Afghans*, Calcutta, 1880. He also compiled a *Pushtu Dictionary and Grammar*, both published in London in 1867, and a lengthy *History of Cholera*, Lahore, 1882, republished in Calcutta in 1884, and in London in 1885.

Another medical officer who served with Forsyth's mission was GEORGE HENDERSON (B 1859), joint author with A. O. Hume of *Lahore to Yarkand*, Calcutta, 1873.

SIR GEORGE ROBERTSON (B 1878), was the first European to explore Kaffirstan, where he spent some two years, the result of his travels being given to the world in *The Kaffirs of the Hindukush*, London, 1896. On his return he was posted to the Political Department and got the K C S I, as Agent in Chitral during the war of 1895 in that state, an account of which he has written in *Chitral, the Story of a Minor Siege*, London, 1898. He retired on 22nd October 1899, and since 1906 has been M. P. for Central Bradford.

W. G. THOROLD (B 1886), accompanied Captain (now General) Bower on his journey through Tibet, Chinese Turkestan, and Mongolia. The journeys in China of C. C. MANIFOLD (B 1887) in 1898-99 earned him a special promotion.

One of the world's greatest explorers, MUNGO PARK, though not a member of the I. M. S., was a medical officer in the Company's service, as Surgeon of the *Worcester* Indiaman in 1792-93. He left that service to undertake the exploration of West and Central Africa.

V THE NATURAL SCIENCES, BOTANY

This science is one of those in which officers of the I. M. S. have done their most successful work, witness the names of Roxburgh, Wallich, Wight, Griffith, Thomson, King, etc.

JOHN GERHARD KOENIG (M 1778), came to India in the Danish service in 1768 as Surgeon and Naturalist at Tranquebar, entered the service of the Nawab of Arcot in 1774, and was appointed Naturalist to the Madras Government on 17th July 1778. It seems doubtful whether he was a secular member of the Medical Service. He drew his pay through the Military paymaster, a Fort St. George letter to that officer, dated 1st April 1780, informs him that Koenig's salary has been increased from forty to sixty pagodas a month, i.e., from about 135 to about 210 rupees. Apparently, therefore, he was considered a military officer. He died of dysentery at Jaganathpuram on 26th June 1785.

WILLIAM ROXBURGH (M 1776), was born at Coalgate in Ayshire on 3rd June 1751, and educated at Edinburgh University. After serving as Surgeon's Mate of an Indiaman, he was appointed Assistant-Surgeon at Madras on 28th May 1776, and reached the rank of Surgeon four years later, on 27th November 1780. Most of his early service was spent at Samuleotta in the Northern Circars. In 1789 he succeeded Patrick Russell as Naturalist at Madras, and on 29th November 1793 was appointed Superintendent of the Calcutta Botanical Gardens, in the place of Colonel Kyd, founder and first Superintendent of these gardens, who died on 26th May 1793. Roxburgh went home in 1813, and died in Edinburgh on 18th February 1815. His chief works were *Plants of the Coast of Coromandel*, three volumes 1795, 1802 and 1819, *Horten Bengalensis*, Serampur, 1814, and the famous *Flora Indica*, published in part with additions by Wallich, after Roxburgh's death, in two volumes in 1820 and 1824, and in full without these additions in 1832. The 1832 edition was reprinted in 1874.

WILLIAM JACK (B 1813), after serving in the Nipal War of 1814-15, went to Sumatra with Sir Stamford Raffles in 1818, and died at Bencoolen on 15th September 1822. He published papers on the Malayan flora in *Malayan Miscellanies*, 1821-22.

BENJAMIN HEYNE (M 1799), was appointed Superintendent of the Pepper and Cinnamon Plantations in Madras in September 1793, in place of Roxburgh, transferred to Bengal. He was confirmed in the Madras Medical Service from 30th April 1799, and died at Vepery on 6th February 1819. He was the author of *Tracts, Historical and Statistical, on India* published in 1814, in

which are included journals of tours in India and Sumatra.

NATHANIEL WALLICH was of Jewish extraction, his original name, it is said, was Nathan Wolff. He was born at Copenhagen on 28th January 1786, and after qualifying in 1806 as Licentiate of the Royal Academy of Surgeons in Copenhagen, came out to Serampur as Surgeon to the Danish Settlement there in 1807. Serampur was taken over by the British in 1808. A public letter from Calcutta, dated 30th June 1809, states in para 210 that "Dr Wallich, a Danish prisoner, has been appointed to assist Dr Roxburgh, but without any additional allowances. In the event of his pursuing his researches in the interior of the country he is to be granted Rs 200 per month for travelling charges."

Wallich got a commission as Assistant Surgeon on 10th May 1814, succeeded Buchanan Hamilton as Superintendent of the Calcutta Botanical Gardens in 1816, and held that post for over thirty years, till he retired on 9th April 1846. He died in London on 28th April 1854. During his long tenure of office he made botanical expeditions in Nipal in 1822, in Penang, Malacca and Assam in 1835, and in Cape Colony, while on leave there, in 1836. His chief works were *Tentamen Florae Nepalensis*, 1824-26, *Plantae Asiaticae Rariores*, 1830-32, while he edited some portion of Roxburgh's *Flora Indica*, with additions bringing it up to date.

ROBERT WIGHT (M 1819), succeeded James Shuter as Naturalist at Madras in 1826, but only held that post for a short time. He retired on 28th February 1853, and died at Graigley, Reading, on 26th May 1872. He was the author of *Illustrations of Indian Botany*, Glasgow, 1831, and Madras, two volumes, 1838-50, and of *Icones Plantarum Indiae Orientalis*, published in six volumes, with over 2,000 plates, at Madras, from 1838 to 1853.

THOMAS ANDERSON (B 1854), while a student at Edinburgh, assisted in arranging Dr Cleghorn's Indian Herbarium for the University Museum. He served with Hodson's Horse in the Siege of Delhi, and in 1861 succeeded Thomson as Superintendent of Calcutta Botanical Gardens. While holding that appointment, he imported yellow bark cinchona from Java. He died in Edinburgh while on furlough, on 26th October 1870. He contributed to the transactions of the Linnæan Society.

JAMES EDWARD TICONEY AITCHISON (B 1858), in 1863, published *Flora of the Jhelum District*, and in 1869 a *Catalogue of the Plants of the Punjab and Sind*. In 1872 he was appointed British Commissioner to Ladakh, and compiled a *Handbook of the Trade Products of Leh*. After serving in the second Afghan War, he accompanied the Afghan Boundary Commission of 1884-85, and wrote the *Flora of the Kuram Valley and of Afghanistan*, 1880, and *The Botany of the Afghan Delimitation Commission*, 1888, and *Notes on the Products of Western Afghanistan and of North*

Eastern Persia, 1890 He retired on 14th May 1888 In his later years he was engaged on a work *Flora Indæ Desertæ*, which he did not live to complete He died at Kew on 30th September 1898

SIR GEORGE KING (B 1865) was appointed Superintendent of Calcutta Botanical Gardens in 1871 He received the C I E in 1890, the K C I E in 1898, retired on 28th February 1898, and died at San Remo on 13th February 1909 He compiled a *Manual of Cinchona Cultivation in India*, 1876, reprinted 1880, *Annals of the Royal Botanic Garden*, Calcutta, seven volumes, 1889, and *Flora of the Malay Peninsula*

K R KIRTIKAR (B 1877), was the author of *Poisonous Plants of Bombay* He retired on 24th May 1904

ARTHUR BARCLAY (B 1874), is known by his work on the life-histories of the lower cryptogams, many of his papers on this subject appear in the first six volumes of *Scientific Memoirs* He died of enteric fever at Simla on 2nd August 1891

Lastly, we must mention LT-COLONEL D PRAIN (B 1884), who succeeded King as Superintendent of the Calcutta Botanical Gardens in 1898, and in 1905, on the retirement of Sir W T Thiselton-Dyer, became Director of the Royal Botanic Garden at Kew He retired on 31st July 1906, received the C I E in 1906, and the C M G in 1912, and is the author of *Bengal Plants*, two volumes, Calcutta, 1904

ZOOLOGY

Though the list is not so long as that of the Botanists, several members of the I M S have made valuable contributions to the study of Zoology in India

The first in point of time is PATRICK RUSSELL (M 1785), who was born on 6th February 1727, and, after serving as Physician to the Turkish Company's Factory at Aleppo from 1753 to 1771, was appointed Botanist and Naturalist at Madras in succession to Koenig, on 4th November 1785, when he was nearly fifty-nine He only held the post for a little over three years resigning on 26th February 1789 He died in London on 2nd July 1805 The chief fruit of his labours in India is contained in his great work, *An Account of Indian Serpents*, four volumes, London, 1796 to 1809 He also wrote *Descriptive and Figures of Two hundred Fishes collected at Vizagapatam*, London, 1803, and *A Treatise on Plague*, two volumes, London, 1791, in which he embodied his experience of an epidemic of that disease at Aleppo in 1760-62

CLARKE ABEL (B 1823), accompanied as Naturalist Lord Macartney's Mission to China, in 1816 On their return *H M S Alceste*, which conveyed the Mission, was wrecked on a reef off Pulo Leat, between Borneo and Sumatra, on 16th February 1817 The crew and passengers were rescued by *H M S Temate* on 6th March, but almost all the collections were lost in the wreck Abel wrote a *Narrative of a Journey in the Interior*

of China, 1816-17, London, 1818 Five years later he was appointed to the I M S, but died at Cawnpore, with under four years' service, on 24th November 1826

THOMAS CAVERHILL JERDEN (M 1835), stands first as a Zoologist, through his famous work, *The Birds of India*, three volumes, Calcutta, 1862-64, and three other works of hardly less importance, *Illustrations of Indian Ornithology*, Madras, 1844-47, *The Mammals of India*, Madras, 1854, republished at Rurki in 1867 and in London in 1874, and *The Game Birds and Waterfowl of India*, 1864 He retired on 27th February 1868, and died at Norwood on 12th June 1872

GEORGE CHARLES WALLICH (B 1838), a son of Nathaniel Wallich, served in the Sutlej and Punjab campaigns After his retirement on 1st September 1859, he was attached to the *Bulldog* in 1860, on her survey of the Atlantic bottom for the proposed cable to America, and made a study of marine zoology for twenty years He was the author of *The North Atlantic Seabed*, 1862 In 1898 the Linnean Society conferred upon him its gold medal He died on 31st March 1899

FRANCIS DAY (M 1852), made a special study of Indian Fish He held the appointment of I G of Fisheries from 1865 till his retirement on 1st November 1876 He received the C I E in 1885, also the Cross of Commander of the Crown of Italy

He died at Cheltenham on 10th July 1889 He was the author of more than a dozen works on his own specialty, the chief of which are *The Fishes of India*, two volumes, London, 1875 and 1888, and *The Fishes of Great Britain and Ireland* two volumes, London, 1880 and 1884 He also wrote two books on other subjects, *The Land of the Permauls*, and *Tropical Fevers*, both published at Madras, in 1863

F BUCHANAN HAMILTON, mentioned above under the head of Travel, was also the author of a work on *The Fishes of the Ganges*, two volumes, Edinburgh, 1822

ALFRED WILLIAM ALCOCK (B 1885), for many years Superintendent of the Calcutta Museum, was the author of many papers on Marine Biology as well as of that most interesting popular book, *A Naturalist in Indian Seas*, London, 1902 He received the C I E in 1903, and retired on 29th December 1907

Under the head of Zoology must also be mentioned the experiments on snake poison carried out by SIR JOSEPH FAYRER (B 1850), and embodied in his great work *The Thanatophidia of India*, London, 1872, second edition, 1884, also those of John Shott (M 1854), of A J WALL (B 1873), author of *Indian Snake Poisons* London, 1883, second edition, 1898, and of F WALL (M 1895)

GEOLOGY

Under this head three names require mention HUGH FALCONER (B 1830), succeeded Royle as Superintendent of Saharanpur Botanical Gardens in 1832, and in the same year, along with Sir Proby

Cautley, discovered the Siwalik Fossils. In 1837-38 he travelled in Kashmir, Skardo, Baltistan, and Ladak, and brought to notice the uses of asafœtida. In 1844-47 he was on special duty in England, arranging the Siwalik Fossils in the British Museum. In 1847 he succeeded Wallch as Superintendent of the Calcutta Botanical Gardens. He retired on 3rd September 1855, and died in London on 31st July 1865. In 1845 he was elected F. R. S., and from 1863 to 1865 was Vice-President of the Royal Society. He wrote *Fauna Antiqua Sivalensis*. After his death another work *Palæontological Memoirs*, was published in 1868, edited by Charles Murdison.

JOHN MCCLELLAND (B. 1830), entered the service on the same day as Falconer, 7th April 1830. He became I. G. on 8th November 1860, retired on 24th November 1865, and died at St Leonards on 31st July 1883. As mentioned above, he edited the posthumous Botanical Works of William Griffith. He also wrote *The Geology of Kumaon*, Calcutta, 1835, *Reports of the Geological Survey of India* for 1843 to 1846, and *Medical Topography of Bengal and the N.-W. P.*, London, 1859, and edited the *Calcutta Journal of Natural History* from 1841 to 1847.

HENRY JOHN CARTER (B. 1842), was the author of *Geology of the Island of Bombay*, 1852, *Summary of the Geology of India*, 1854, and *Geological Papers on Western India*, 1857. He received the Royal Medal of the Royal Society in 1872. He retired on 31st March 1864, and died at Budleigh Salterton on 4th May 1895.

ECONOMIC SCIENCE

This is rather a wide subject. Here it may be taken to mean the application of the Natural Sciences to practical use in working life.

JAMES ANDERSON (M. 1762 or earlier), served in the Siege of Manila in 1762, and afterwards was Superintendent of the Madras Botanical Garden. In 1781, on the death of Gilbert Pasley, he was appointed Surgeon-General and when the Madras Medical Board was founded in 1786, became the first President of the Board and Physician General. He died at Madras on 5th August 1809. He introduced cochineal into India, and had a large share in the introduction of silk, sugarcane, coffee and American cotton. He was the author of a series of papers on these subjects, published from 1781 to 1796, and of a paper on *The Minerals of Coromandel*, Madras, 1796.

ELLENUS SCOTT (B. 1783), in 1784 introduced a new method of preparing alkali, which was highly praised at the time.

DAVID TURNBULL (B. 1791), who for most of his service was Civil Surgeon of Mirzapur, and combined with his professional duties an extensive business in *zamindari* and country produce, discovered the use of lac dye in that district about 1806*.

JOHN FORBES ROYLE (B. 1819), in 1823 was appointed Superintendent of Saharanpur Botanical Gardens. He retired, after a long spell of leave in England, on 25th April 1837. From 1836 to 1856 he was Lecturer on Materia Medica in King's College, London, and from 1847 to 1857 Reporter on Economic Products to the East India Company. He represented the Company at the great Exhibition of 1851 in London, and at that of 1855 in Paris, when he was made a Knight of the Legion of Honour. He died at Acton on 2nd January 1858. In 1834 he published *The Botany of the Himalaya Mountains and Kashmere*, and, after his retirement, he wrote many works on Indian Economic products: *The Productive Resources of India*, 1840, *The Production of Isinglass in India* 1842, *Culture of the Teaplat in the Himalayas*, 1849, *The Fibrous Plants of India*, 1855, and *The Culture and Commerce of Cotton in India*, 1851. He was also the author of an *Essay on Hindu Medicines*, 1837, and of a *Manual of Materia Medica and Therapeutics*, a standard textbook in its day, though now forgotten which ran through six editions, the last, edited by John Hailey, in 1876.

Since Royle's death, appointment of much the same nature as his, under different names have been held, in the Indian office, by JOHN FORBES WATSON (B. 1850), and SIR GEORGE BIRDWOOD (B. 1854). Both were the authors of many works. Watson combined with this appointment the post of keeper of the Indian Museum, till he retired in 1879. He died at Norwood on 29th July 1892. His chief work is the *Textile Manufactures and Costumes of the People of India*, London, 1866. Birdwood was Curator of the India Museum from 1875 to 1879, and special Assistant in the Commerce and Statistics Department of the India Office, up to his retirement in 1898. He received the C. I. E. in 1877, a Knighthood in 1881, and the K. C. I. E. in 1887. Of some twenty published works the chief are *Report on the Old Records of the India Office*, 1879, and *The Industrial Arts of India*, 1880.

EDWARD GREEN BALFOUR (M. 1836), founded the Government Museum at Madras in 1850. He was Surgeon-General of the Madras Service from 15th August 1871 till his retirement on 30th June 1877, and died in London on 8th December 1889. Of a long list of works, the chief are *The Timber Trees, Timber, and Fancy Woods as also the Forest of India*, Madras, 1862, and his great *Encyclopadia of India*, three volumes, Madras, 1857, with two supplementary volumes, 1858 and 1859, second edition, Madras, 1871-73, third edition, London, 1885.

EDWARD JOHN WARING (M. 1849), had been in the Colonial Medical Service in Jamaica before entering the I. M. S. He served in the first Burmese War, retired on 13th September 1865, received the C. I. E. in 1881, and died in London on 22nd January 1891. In 1868 he compiled the first official *Pharmacopœia of India*. He was also the author of the well-known work on *Bazar Medi-*

* Gentleman's Magazine, March, 1807.

ences, first published in 1860, and still in frequent use. The sixth and latest edition, issued in 1901, was edited by the present Director-General, SIR PARDEY LUKIS, M.D., F.R.C.S., K.C.S.I.

JOHN SHORTT (M 1854), wrote much on agriculture and kindred topics, *Handbook to Coffee Planting*, Madras, 1864, *Manual of Indian Cattle and Sheep*, 1876, *On the Coconut Palm*, 1888, and *Manual of Indian Agriculture*, 1889. He was also the author of *An Account of the Tribes on the Neilgherries*, 1868, and a *Manual of Family Medicine for India*, 1875.

The work of FRANCIS DAY (M 1852), on fishes, and his appointment as Inspector-General of Fisheries, have already been mentioned.

FOREST DEPARTMENT

Some members of the I.M.S. had a large share in the organisation of the Forest Department. ALEXANDER GIBSON (Bo 1825), was appointed Superintendent of the Dapuri Botanical Gardens in 1838, and Conservator of Forests in 1847, holding that post till he retired on 8th June 1860. He died on 16th January 1867. He was the author of *Forest Reports, Bombay Presidency*, 1847 to 1855, *Bombay Flora*, 1861, and *Handbook to the Forests of the Bombay Presidency*, 1863. Wallich, in 1827, had examined and reported in the teak forests of Tenasserim. In 1852 McCLELLAND was appointed Superintendent of the Forests in the newly acquired province of Lower Burma, an appointment in which he was succeeded, in January 1856, by (Sir) Dietrich Brandis, for long the first head of the Forest Department. HUGH FRANCIS CLARKE CLEGHORN (M 1842), after serving for some years in the Mysore Commission, was Professor of Botany and Materia Medica at Madras from 1851 to 1855, when he was appointed Conservator of Forests, and in 1867 Acting Inspector-General of the Forest Department. He retired on 11th February 1869, and died on 16th May 1895. He was the author of several works on his own speciality, including *The Forests and Gardens of South India*, London, 1861, and a *Report upon the Forests of the Punjab and Western Himalaya*, 1864. JOHN LINDSAY STEWART (B 1855), after serving through the Siege of Delhi in the Militia, officiated for Dr Jameson as Superintendent of Saharanpuri Botanical Gardens in 1860-61, and was appointed Conservator of Forests in the Punjab in 1864, holding that post till he died at Dalhousie on 5th July 1873. While on furlough in 1869-1871 he worked at Kew on the preparation of a *Forest Flora of Northern and Central India*. He was the author of several papers on his own subject, *Flora of the Peshawar Valley*, 1863, *Flora of Waziristan*, 1863, *The Sub-Sevak Tract*, 1865, *A Botanical Tour in Hazara and Khagan*, 1866, *A Tour on the Punjab Salt Range*, 1866, and *A Botanical Tour in Ladakh and Western Tibet*, 1869.

We believe that the appointments of Dr Gibson, McClelland and Cleghorn, were the first such appointments made in India, though it was under

Sir D. Brandis, who was not a member of the I.M.S., that the Forest Department was properly organised. We might also mention that an attempt to extract teak from the forests of Malabar, and to substitute that wood for oak as the standard material for shipbuilding, was made in 1796, by a syndicate, the guiding spirit of which was ALEXANDER LOCKHART MACKONACHIE (Bo 1788). This venture ended in failure.

BUCHANAN-HAMILTON's surveys might perhaps better be included under the head of Economic Science than under that of Travel.

WILLIAM JAMESON (B 1838), succeeded Falconer as Superintendent of Saharanpuri Botanical Gardens in 1842. He played an important part in the introduction of the cultivation of tea into India. He retired on 31st December 1875, and died at Dehra Dun on 18th March 1882. He was the author of a *Report on the Cultivation and Manufacture of Tea in Kumaon and Garhwal*, 1845, *The Cultivation of Flax in the N.W.P.*, 1861, *Government Tea Plantations*, 1862, and *The Plantation of Canal Banks*, 1876.

EMANUEL BONAVIA (B 1857), advocated the cultivation and improvement of the date palm and of oranges in India by his writings, *The Future of the Datepalm in India*, 1885, and *The Cultivated Oranges and Lemons of India and Ceylon*, 1890.

THE ELECTRIC TELEGRAPH

SIR WILLIAM BROOKE O'SHAUGHNESSY (B 1833), while Professor of Chemistry in the Calcutta Medical College, conducted the first experiments for the introduction of the Electric Telegraph into India. He was appointed Director-General of Telegraphs in India in 1852, and held that post till his retirement on 10th October 1861. Begun in 1853, the telegraph lines from Calcutta were completed to Agra in 1854, to Madras and Bombay in 1855. He was knighted in 1856, in 1861 added the surname of Brooke after O'Shaughnessy, and died at Southsea on 10th January 1889. He was the author of *The Bengal Dispensatory*, London, 1842, and of *The Bengal Pharmacopoeia*, Calcutta 1844.

THE POST OFFICE

Officers of the I.M.S. also played a considerable part in the development of the Indian Post Office. In the first half of the nineteenth century, the Civil Surgeon was frequently Postmaster of his station. JAMES RANKIN (B 1809), was Postmaster-General of the N.W.P. from 1st January 1841, till he retired on 18th September 1845. GEORGE PATON (B 1835), was Director-General of the Post Office in India from June 1861 till his retirement on 26th September 1864. ELIJAH IMPEY (B 1840), was Postmaster-General, Bombay, from 16th May 1856 till his death on 19th November 1868.

EDUCATION

In education, THOMAS ALEXANDER WISE (B 1827) when Civil Surgeon of Hughli, founded

Hughli College, of which he was the first Principal, doubling the work with the Civil Surgeoncy from 1836 to 1839, when he was appointed Secretary to the Committee of Education, a post corresponding roughly with that now called Director of Public Instruction. JAMES ESDAILE (B 1831), succeeded him, both as Civil Surgeon of Hughli and Principal of Hughli College. Wise was subsequently Principal of Dakka College. He retired on 11th May 1851, and died on 23rd July 1889. He was a prolific author, his chief work being *A Commentary on the Hindu System of Medicine*, Calcutta, 1845, a very mine of information on the subject of which it treats. He also wrote a *Treatise on the Diseases of the Eye in Hindustan*, Calcutta, 1847, and one on *Cholera*, Calcutta, 1864, and a *Review of the History of Medicine*, two volumes, London, 1867. JOHN PEET (B 1842), also served in the Education Department as Inspector of Education, Bombay Presidency, from 1856 to 1861, though most of his service was spent on the staff of the Jamsetji Jijibhai Hospital, and for the last five years of his service he was principal of the Grant Medical College, Bombay. His only published work is one on *The Principles and Practice of Medicine*, London, 1864, and he was one of the few members of the I M S who have been elected to the Fellowship of the Royal College of Physicians, London, an honour which he received in 1860. He retired on 14th January 1867, and died at Shanklin on 18th January 1874.

ASSAY DEPARTMENT

The Assay Department of the Mint has been officered and worked almost entirely by members of the I M S, from the beginning to the present day.

VETERINARY DEPARTMENT

The Veterinary Department in India is of comparatively recent development, and, until within the last half century, the only trained exponents of this science were a few veterinary surgeons in Cavalry regiments. Most of what little was done in this science was done by officers of the I M S. W. GILCHRIST (M 1830), compiled treatises on the diseases of the Camel, 1811, of the Elephant, 1843, and of the Bullock, 1846, republished in one volume by the Madras Government in 1849. SHORT'S *Manual of Indian Cattle and Sheep* has already been mentioned. K. McLEOD (B 1865), while Civil Surgeon of Jessore in 1869, submitted a full Report on the Epizootic Diseases of Cattle in Lower Bengal, which clearly established that the common cattle disease of India was undipest. He subsequently drew up a *Manual of Diseases of Cattle*, 1869, which was translated into Bengali and a *Report on the Sanitary Treatment of Epizootics*, 1869. In 1870 he served upon a Commission to enquire into Indian cattle disease, and compiled their report in 1871. In 1883 he compiled a *Report on Establishing a Veterinary School in Bengal*. The site for the veterinary hospital and school at Belgachia, with Rs. 30,000, for its erec-

tion, were given by Raja Sheo Baksh Bagla, a grateful patient of McLeod's, at his suggestion, the school and hospital were opened in 1894.

VI PHILOLOGY, ETHNOLOGY AND LITERATURE

Philology is, with the possible exception of Botany, the branch in which the work of officers of the I M S has attained its highest level. Three great names stand out pre-eminent, LEYDEN, WILSON and SPRENGER, and there are many lesser lights.

HOLWELL seems to have been the first of the Company's servants to take an interest in the languages and religions of the natives of the country. After his retirement he published his *India Tracts* in 1764, and *Interesting Historical Events relative to the Province of Bengal and Empire of Indostan*, in three volumes, from 1765 to 1771. The latter work contains several treatises on the Hindus, including *The Religious Tenets of the Gentoos* (Hindus), and *The Metempsychosis of the Brahmans*.

FRANCIS BALFOUR (B 1769), was the first officer of the I M S, and one of the first of the Company's officers, to take up the study of Persian and Urdu. In 1781 he published *The Funs of Heikern*, a State letterwriter in Persian. He is said to have made a translation of the *Siyar-al-Mutakherin*, but, if he did so, it has been lost. JAMES ROSS (B 1783), who wrote under the nom-de-plume of *Gulchin* (Culler of Roses), made a translation of the *Gulistan* of Sadi, published in 1823. HENRY HARRIS (M 1783), when he had only seven years' service, in 1790, published a *Hindustani Dictionary*. On the work of Harris Shakespeare's *Hindustani Dictionary*, first published in 1817, was to a great extent founded.

JOHN BORTHWICK GILCHRIST (B 1783), was a most voluminous writer on philology over twenty works standing to his credit. The most important are his *Hindustani Dictionary and Grammar*, published, the first in 1787 and 1790, the second in 1796. He was for long on special duty compiling these works. Among other books, well-known in their day, but long since forgotten, may be mentioned *The Oriental Linguist*, 1798, *The British Indian Monitor*, 1800, *The Stranger's East India Guide*, 1802, *The Hindoo Moral Preceptor*, 1803, *Hindoostanee Philology*, 1810, and *Hindoo-Roman Orthographical Ultimatum*, 1820. Some of these works are abridgments or amplifications of others. In 1798 Gilchrist was deputed to teach Hindustani to the newly joined civilians, and, when the College of Fort William was opened in 1800, he was appointed its first Principal. He went home in 1804, and retired on 6th January 1809. From 1818 to 1825 he was Lecturer on Hindustani to the Company, in London, teaching that language to the newly appointed medical

* H. HARRIS was great-grand father of Colonel G. F. A. Harris, C.S.I., I.R.C.I., I.M.S., the Inspector General of Civil Hospitals, Bengal.

officers and others. He died in Paris on 9th January 1841.

ROBERT DRUMMOND (B. 1796), compiled Grammars of the Marathi and Gujarathi languages in 1799. He had served in the 77th Foot before entering the I. M. S., and was lost in the *Lady Jane Dundas* on 14th March 1809.

JOHN LEYDEN (M. 1803), was born at Denholm in Roxburgh on 8th September 1775. After studying at Edinburgh, he was licensed as a preacher of the Church of Scotland at St Andrew's in May 1798. He made some reputation in literature, but was not successful in the Church. He was offered an appointment in the I. M. S., if he could obtain a medical qualification, and succeeded in getting both the L. R. C. S., Edinburgh, and the M. D., St Andrew's, in 1802, after six months' study. He landed at Madras on 19th August 1803, and, after serving in the General Hospital there, was employed in surveying Mysore, and wrote a report on the geology, crops, language, and diseases of that province. In 1805 he travelled in Cochin, Malabar, and Penang, and in 1806 was transferred to Calcutta, where he was appointed Professor of Hindustani in the College of Fort William, three years after he had reached the country, with service little longer than his pupils. In 1808 he was appointed judge of the 24-Parganas, in 1809 Commissioner of the Court of Requests, Calcutta, and in 1810 Assay Master of the Mint. In 1811 he accompanied the Governor-General, Lord Minto, to Java, was present at the capture of Batavia on 7th August 1811 and died on 28th August at Cornelis, Batavia, from fever. During his short service of eight years, he seems to have done no medical work after he left the Madras General Hospital. During these eight years he wrote a *Dissertation on the Languages and Literature of the Indo-Chinese Nations*, an *Essay on the Indo-Persian, Indo-Chinese and Dekkan Languages*, compiled Grammars of Malay and Prakrit, translated the Gospels into Pushtu, Baluchi, Maldivian, Macassar, and Buxi, and translated into English *Malay Annals*, and part of the *Memoirs of Babar*.

JOHN CRAWFORD (B. 1803), was posted to Penang in 1808, served at the capture of Java in 1811, and then in political employ in Java up to 1817, when he took furlough home. On his return in 1820, he was employed on an Embassy to Siam and Cochin China in 1820-23, succeeded Sir Stamford Raffles as Administrator of Singapore in 1823, and held that post till 1826, when he was deputed on an Embassy to Ava. He retired on 12th July 1827, and died in London on 11th May 1868. He was the author of a *History of the Indian Archipelago*, three volumes, 1820, *Account of an Embassy to Siam and Cochin China*, 1828, *Journal of an Embassy to the Court of Ava*, 1829, *Grammar and Dictionary of the Malay Language*, 1852, and *Descriptive Dictionary of the Indian Islands*, 1856.

JAMES ATKINSON (B. 1807), made many translations of the Persian classics into English, Lidansi's

Schrah in 1814, *Hatim Tace* in 1818, *Aubul* in 1819, and the whole *Shahnama* in 1832, and of Nizami's *Layla and Majnun* in 1836. He was also the author of many volumes of verse, of translations from the Italian, etc. Among his numerous writings only one professional work is comprised. That one, curiously, is on Lithotomy, *The New Process of Perforating and Destroying the Stone in the Bladder*, published in 1831, nearly half a century before that great advance in surgery came into general use. Atkinson served as Superintending Surgeon of the Army of the Indus in 1839-42, became a member of the Medical Board on 15th February 1845, retired on 10th April 1847, and died in London on 7th August 1852.

HORACE HAYMAN WILSON (B. 1808), soon after his arrival in India was posted to the Calcutta Mint, of which he became Assay Master in 1816, and spent the whole of his service in the Mint, an appointment which left him ample leisure for his linguistic studies. In 1811 he became Secretary to the Asiatic Society. He also took a great interest in the drama, and managed the Calcutta theatre for many years, his wife was a granddaughter of Mrs Siddons. In 1820 he was temporarily deputed to Benares to reorganise the Sanskrit College there. He returned to England in 1831, and retired on 28th January 1834. On 15th March 1832, he was elected Boden Professor of Sanskrit at Oxford, by 207 votes against 200 for Dr Mil'. In 1836 he was appointed Librarian to the East India Company, and held both appointments till his death, which took place in London on 8th May 1860. Wilson was the author of nearly thirty works of importance, historical and philological, many of which ran through several editions. We can only spare space for the names of a few, a Translation of Kalidasa's *Meghaduta*, or *Cloud Messenger*, 1813, *The Theatre of the Hindus*, three volumes, 1826-27, *Sanskrit-English Dictionary*, 1819, *The Vishnu Purana*, 1840, *Sanskrit Grammar*, 1811, *The Religious Sects of the Hindus*, 1846, *Rig-Veda Samhita*, six volumes, 1850-58, and a *Glossary of Indian Judicial and Revenue terms*, 1855. The last work is still in frequent use.

GERHARD ANDREAS HLERLOTH (M. 1818), translated the *Qanoon-i-Islam or Customs of the Musalmans*, published in 1834.

ALOYS SPRENGER (B. 1843), was born at Nasseireit in the Tyrol on 3rd September 1813, and educated at Vienna and at Leyden, where he took the degree of M. D. in 1841. Soon after he joined, in 1844, he was appointed Principal of the Muhammadan College at Delhi. In 1848 he was transferred to Lucknow as Assistant Resident, and in 1850 to Calcutta, as Principal of the Madrasa and Persian translator to Government. He retired on 10th March 1859, and soon afterwards was appointed Professor of Oriental Languages at Berne University. He resigned that chair in 1881, and died at Heidelberg on 19th December 1893. While in India he collected a great library of Oriental MSS., which was purchased for the

Prussian State Library in 1858. He is said to have known twenty-five languages. The list of his works is long. They consist chiefly of catalogues and of editions of Persian MSS. but include *History of Mahmud Ghuznabi*, 1847, *Life of Muhammad*, 1851, and a translation of the *Gulistan* 1851.

BELLEW's *Pushtu Dictionary and Grammar* have already been mentioned. A. S. JAYAKAR (Bo 1867), translated a zoological lexicon from the Arabic. And we may briefly allude to the works of G. S. A. RANKING (B 1875) in Urdu and Persian, including an *English-Hindustani Dictionary*, 1905.

ETHNOLOGY

A few works on this subject may here be enumerated, the treatises in HOLWELL's *Historical Events, Customs and Manners of the Women of Persia*, by J. ATKINSON, *Budair Sabism* by W. TYTLER (B 1808), TAYLER's *Serpent Worship*, SHORTT's *Tribes on the Neilgherries*, BELLEW's *Races of Afghanistan and Ethnography of Afghanistan* and some of the works of L. A. WADDELL (B 1880), *Tribes of the Brahmaputra Valley* and *The Buddhism of Tibet*.

In *General Literature* we cannot claim a high place for the work of members of the I M S. No work of anything like the first rank has been produced by any member of the Service. Professional works do not come under the head of Literature. Works on Travel, Science, etc., have been separately considered above. Many men have tried their hands at writing novels, but without much success, the most readable, perhaps, being *Golden Bullets*, by W. W. IRELAND, and *Spirit of Storm*, by SIR RONALD ROSS. Leyden had some reputation as a minor poet, before he entered the service. Many other men have published volumes of verse, the most pretentious being the translation of Dante's *Inferno* into blank verse, issued by JOSEPH HUME (B 1799), the once well known radical M. P., in 1812, but none are at all likely to live. As instances, however, of interesting works in their respective lines may be given *Indian Field Sports*, by DANIEL JOHNSON (B 1789), *Sketches from Nepal*, by H. A. OLDFIELD (B 1846), and *Plagues and Pleasures of Life in Bengal*, and *Some Indian Friends and Acquaintances*, by D. D. CUNNINGHAM (B 1868).

INDIAN HISTORY

To Indian History members of the I M S have contributed many volumes. If none can claim to rank among the great histories of English Literature, many are sound works of some historical importance, and many are interesting to read. We can only spare room to give the bare names of a dozen or so of authors and their works, J. ATKINSON (B 1807), *The Expedition into Afghanistan*, H. H. WILSON (B 1808), *Narrative of the Burmese War, 1824-26*, Wilson also compiled the last three volumes, the sixth to the ninth, of *Mill's History of British India*, R. H. KENNEDY

(Bo 1811), *Narrative of the Campaign of the Army of the Indus in Scinde and Kabul in 1838-39*, J. BIRD (Bo 1818), *History of Gujarat*, SIR JAMES BURNES (Bo 1821), *History of Cutch*, W. L. MACGREGOR (B 1826), *History of the Sikhs*, D. MACPHERSON (M 1836), *The War in China and Antiquities of Ketchi*, T. DUKA (B 1854), *Croma de Koros*, J. J. HALLS (B 1854), *Two Months in Arrah in 1857*, W. W. IRELAND (B 1856), *History of the Siege of Delhi*, D. WRIGHT (B 1858), *History of Nepal*, SIR HENRI BLANC (Bo 1859), *Narrative of Captivity in Abyssinia*, J. DUKE (B 1872), *Recollections of the Kabul Campaign* and finally that most charming book *Echoes of Old Calcutta*, by H. E. BUSTEED (M 1855).

ART

Art is not a subject which has appealed greatly to many Indian officers of any service. But we must not omit to note the work of Colonel T. H. HENDLEY (B 1869), and his publications on Indian Art, during nearly a quarter of a century at Jaipur, *Jeypore and its Arts*, *Alwar and its Art Treasures*, *Jeypore Enamels*, *Damascening on Steel*, *Asian Carpets*, and *Indian Jewellery*. We may also mention under the head of Art, ATKINSON's *Sketches in Afghanistan*, 1842 the original paintings for which now hang in the India Office, and some of the works of J. F. WATSON and of SIR GEORGE BIRDWOOD.

VII WAR SERVICES

About the war services of the I M S little need be said. Members of the service have, as a matter of course, taken part in every war, in every frontier expedition, in which the Indian Army has been engaged, from the first enlistment of the little garrisons of the Company's factories to the present day, from China to Arabia, from Egypt to the Cape. Past or future members of the I M S, *i.e.*, men who had previously left, or who subsequently entered the service, have also served in every war of importance in which the British Army was engaged during the nineteenth century with the exception of the final advance on Omdurman, in the Peninsula (five), at Waterloo (three), in the Crimea (about twenty-five), in New Zealand, Ashanti, and Zululand, also in the American Civil War (two), in the Franco-German and Russo-Turkish Wars. Two have earned the soldier's highest distinction, the Victoria Cross. Over thirty have fallen in action, some in great battles, some in long forgotten petty skirmishes. (This number does not include about five medical officers killed in the Patna Massacre, nor about twenty-five members of the Bengal Service killed by Mutineers).

DECORATIONS

The number of orders and decorations bestowed on members of the service from the G. C. B. conferred on SIR JOHN MCNEILL to the Kaiser-i-Hind Medal, has been over 220. Of such other distinctions as Baronetcies (two), Knighthoods (eleven),

Honorary degrees of D C L or LL D, Fellowship of the Royal Society, Honorary Physicianships and Surgeoncies to the King, Good Service Pensions, etc, over 160 have been earned by officers of the I M S

CONCLUSION

This lengthy review of the services of the I M S may be concluded with a few miscellaneous notes, which hardly fall under any of the various headings above. JAMES ESDALE, (B 1831), demonstrated the possibility of performing major surgical operations under anæsthesia caused by mesmerism. The results he obtained were so marvellous as to be hardly credible, though vouched for by a Committee composed of Civilian and Medical Officers. Esdaile, in fact, narrowly missed becoming one of the most important benefactors of the human race. The almost simultaneous discovery of the anæsthetic properties of ether and of chloroform killed mesmerism. Not every Surgeon could exert the mesmeric power, not every patient was subject to it. Certain risks were also involved by it from which ordinary anæsthesia is free. But it offered a prospect of relief from suffering under the knife which every patient would gladly have embraced, had the same end not become more easily obtainable by other means.

have given the names and briefly related the work of those perhaps one hundred in all, who have attained some degree of fame in their generation, whose names may endure for a short space. But work almost if not quite equally good has been done by hundreds who are now forgotten, whose only record is the bare entry of their names in the successive issues of the Indian Army Lists. If we of the present generation do the day's work as well as our predecessors have done it, we may rest satisfied when we, in our turn, pass into oblivion.

MEDICAL COLLEGES, SCHOOLS AND HOSPITALS IN INDIA

We have above referred to the small beginnings of the hospitals and of medical teaching in India. To show what has been accomplished under the auspices and by means of officers of the Indian Medical Service in India, we may make the following extracts from the last report of the Sanitary Commissioner with the Government of India, Sir Pardee Lukis, M D, K C S I, recently published.

The first table shows the number of medical institutions in India which are scattered over this vast empire. They are still far too few, but how different from the India of less than one century ago!

Province		Number of Institutions	Number of In patients	Number of Out patients	Total number of Patients	Number of Operations
Eastern Bengal and Assam	1910	360	24,322	3,524,639	3,548,961	80,769
Bengal (excluding Calcutta)	1910	351	43,269	3,074,170	3,117,439	139,906
Calcutta	1910	15	24,752	311,702	336,454	35,301
United Provinces	1910	332	69,736	4,474,100	4,543,836	190,871
Punjab	1910	300	75,202	4,222,251	4,297,453	220,094
North West Frontier Province	1910	50	11,357	760,274	771,631	30,716
Central Provinces	1910	167	13,805	1,775,965	1,789,773	40,531
Burma	1910	137	55,277	1,316,994	1,372,271	40,470
Madras	1910	506	77,633	6,007,735	6,085,368	215,994
Bombay	1910	327	54,612	2,207,073	2,261,685	99,123
Baluchistan	1910	25	3,933	211,560	218,493	1,824
Total	1910	2,670	1,53,901	27,859,469	28,343,370	1,089,899

SIR JOHN MCNEILL (B 1816), was Ambassador to Persia from 1836 to 1842, received the G C B in 1839, served as special Commissioner in the Crimea in 1855, and was sworn of the Privy Council in 1857, the only member of the I M S who has ever attained these two distinctions. JULIUS JEFFREYS (B 1822) was the first to suggest the suitability of Simla for a hill station, and was also, in 1836, the inventor of the respirator. SIR JOHN LOGIN (B 1832) was tutor and guardian to Dulip Singh, son of Ranjit Singh.

Long and perhaps tedious as these articles may seem, we have barely touched the fringe of the subject. Purely professional work, medicine and surgery, medical education, hospitals, sanitation, have been but briefly considered, these being matters of every-day routine to the I M S. It has been our object rather to describe work done outside the bare limits of ordinary duty. We

Medical College, Calcutta—The fourth block is nearly ready, and will give increased accommodation. The provision of separate Biological and Physical laboratories and a pharmacy room are under consideration. Attendance at the College continues to increase, there were 380 applications for admission against 293 last year, of these 123 joined. The number of male students, other than military, was 600, and of female 17. The military class numbered 107. 78 pupil nurses were trained, and the "dhar" class consisted of 31 women.

130 students appeared for the final L M S and 18 for the M B, of these 53 and 7, respectively, passed.

The total expenditure was £19,000, and receipts from fees amounted to £3,530. The staff of the College cost £12,058.

Medical Schools, Bengal—Attendance at the Campbell School was about the same as last year,

at Cuttack there was a slight decrease and at Patna a slight increase. Altogether there were 507 male and 28 female students as compared with 495 and 26 last year. 43 students passed the final diploma examination and 110 became qualified compounders.

The total cost of the three schools was £9,162 of which the establishment accounted for £4,864.

Medical Schools, E B and A—The students at the two Schools at Dacca and Dibrugarh numbered 295 against 319 last year. The military classes consist of 40 students. 72 passed the final diploma examination, and 35 obtained compounders' certificates.

The total expenditure amounted to £4,616 and £441 were received as fees. The stipends of female patients were raised from Rs 7 to Rs 10 per month. The cost of educating a pupil is Rs 216 per annum at Dibrugarh, and Rs 192 at Dacca.

Agra Medical School—The number of students fell from 329 to 301, of whom 66 were females. Fewer applications for admission were received. This decline is due to the Entrance certificate having been made compulsory. 60 pupils went up for the final examination and 39 passed. The King George's Medical College at Lucknow has been completed and was opened for junior classes in October 1911.

Lahore Medical College and School—The numbers of students on the rolls were 167 and 263 respectively, as against 175 and 207 last year. The reduction in College admissions is due to the higher preliminary standard required, and the increase in the school is ascribed to the date of admission being more popular. 71 students went up for the final M B or L M S examinations and 26 passed, and 50 went up for the final school examination and 41 passed.

The total expenditure was £13,116 and the fees received amounted to £875. The complete rebuilding of the College will shortly be commenced.

Government Medical School, Rangoon—The number of students on the rolls was 43, of whom 10 passed their final examination and entered Government service.

Expenditure was £1,572, and fees amounted to £8. The school is still in its infancy, and the improvement in pay and prospects of the sub-assistant surgeon class may improve its popularity and the quality of its students.

Madras Medical College—There were 388 students on the rolls, but this number, though a reduction on last year's figure, is still too large for the existing accommodation. 23 pupils went up for the final L M S and 13 passed, 22 for the Final M B and two passed.

Post collegiate classes were held for civil sub-assistant surgeons.

The new Physiology and Hygiene Laboratories have been completed, but the general improvement and enlargement of the college buildings are still urgently necessary.

Total expenditure amounted to £12,840, of which sum establishment charges represented £11,212. Fees brought in £2,170.

Royapuram Medical School—The year closed with 177 pupils, 19 went up for the final examination and 14 passed. The total expenditure was £1,881, of which sum £170 were recovered as fees. The rent of quarters in the hostel has been reduced to Rs 2 per mensem, but residence there has been made compulsory in the case of stipendiary students.

Tanjore Prince of Wales' School—The number of students has risen to 94, seven went up for the final examination and six were successful. The school cost £780 of which £11 were recovered as fees.

Vizagapatam—The school consists of only 52 students, of these four went up for the final examination, and all were successful. A new school building has been provided, and it is believed the popularity of the institution is increasing. Expenditure amounted to £1,091 and fees brought in £20.

Grant Medical College, Bombay—The number of students is 519, exclusive of 45 military pupils. There are 29 female students, 167 went up for the Final L M S and 55 passed. The new lecture theatre, a hostel and pathological laboratory have been brought into use, and a physiological laboratory is under construction. Four additional lectureships have been created.

Medical School, Poona—The number of students was 136, of whom 56 were military, 23 passed the final qualifying examination. Great difficulty is experienced in obtaining suitable candidates for the military class.

Medical School, Ahmedabad—The number of pupils was 139, of whom 55 were military, 22 passed the final examination. The new hostel accommodates 45 students, and is now full.

Medical School, Hyderabad—The number of pupils was 51, at the final examination 8 passed. A new dissecting room has been provided and a maternity ward in the civil hospital is now available for purposes of instruction.

The X-Ray Institute of India—Two classes of instruction have been held during the year, numbering 37 students in all. Of this number 33 passed the prescribed examination, 4 obtaining special proficiency certificates, and 4 failed to pass. The students included officers of both services (Civil and Military), assistant-surgeons and sub-assistant surgeons (Civil and Military) as well as one assistant surgeon and one sub-assistant surgeon from Native States. The number of skiagraphic examinations made at the institute was 1,121, the electrolytic and mercurial interrupters with direct running from the mains being ordinarily employed.

The Calcutta School of Tropical Medicine—The new buildings of the Tropical School of Medicine will be situated in close proximity to the Medical College with a north light for the working rooms. The ground floor will comprise

the biological laboratory for the classes of the medical college students and the post-graduates, and will include a room for various forms of animal life required for the demonstrations and a cold storage room, as well as a completely equipped laboratory for two research workers. Above this will be two floors devoted to pathological research, with separate rooms for a number of workers in various branches of the subject. These will provide for hæmolytic and serological work, including the bio-chemical test for differentiating human from animal blood, the adoption of which for medico-legal work cannot be much longer delayed in India, opsonic work, Wasserman tests, rooms, etc. Rooms will also be available for officers engaged on special researches, including those holding research scholarships, while it is hoped that workers will be attracted for other countries by the unique opportunities presented by Calcutta for investigations on tropical medicine. Behind the working rooms will be a small lecture theatre for the post-graduate classes, with comfortable wide desks, while arrangements will be made for darkening the room so as to allow of the use of the epidiascope for illustrating the lectures on the lantern screen. In the compound provision will be made for animal houses, so that experimental work can be carried when necessary. This will form the nucleus of for post-graduate teaching and research, which will be capable of extension to meet future requirements.

MEDICAL RESEARCH IN INDIA

The following extracts from the Report of the Sanitary Commissioner with the Government of India will show what is at present being done in India for the advancement of medical knowledge—

The staff of the Central Research Institute, Kasauli, conducted investigations during the year into (a) Epidemic dropsy in Calcutta (b) some aspects of malaria in the Punjab, (c) the relation of tetanus to hypodermic and intra-muscular injection of quinine, (d) a new method of anti-rabic treatment by means of dord rabies virus, (e) Kala-azar at Golaghat, and (f) Dysentery at Hazaribagh. Reports of the results of the first five of these investigations have been published as numbers of the Scientific Memoirs. Reports on Kala-azar and dysentery are under preparation.

Short courses of instruction in clinical bacteriology and technique were given at the Institute and were attended by 23 officers of the Indian Medical Service. The course includes instruction in the practical application of bacteriological knowledge to the conditions in which diseases are met with in India and methods of improvising small laboratories for clinical bacteriological work in the plains. In December 1910 eight officers of the Royal Army Medical Corps attended a course of instruction which included, in particular, the technique of the Wasserman test for syphilis.

The demand for curative sera and vaccines continued to increase, and during the year the Institute complied with orders to the following extent—

Anti-venomous serum	2,836 doses
Anti-diphtheritic serum	1,453 "
Anti-tetanic serum	1,054 "
Anti-streptococcal serum	447 "
Anti-dysenteric serum	48 "

Normal horse serum	30 doses
Anti-typhoid vaccine	1,964 "
Anti-tubercle vaccine	3,972 "
Anti-staphylococcus vaccine	1,041 "
Acne vaccine	228 "
Special indigenous vaccines	450 cases
Tuberculin solutions for cutaneous test	447 tests

Of the above anti-tetanic and anti-streptococcal sera are obtained from England and stocked for issue. The total sum realized on account of sera and vaccines issued from the Institute during the year amounted to Rs. 25,688 9 0.

The other work carried out by the Institute included the examination of 2,637 specimens of a miscellaneous collection of pathogenic material with a diagnosis in each case.

The Bombay Bacteriological Laboratory continued to be conducted as (a) the Plague Laboratory for the whole of India and (b) the provincial Bacteriological Laboratory. During the year 625,690 doses of anti-plague vaccine were issued, an increase of 32,526 doses on the output of the previous year. It is evident that confidence in this method of combating plague is slowly but steadily growing. The total amount of money credited to Government during the year, as the result of the sale of the plague prophylactic was Rs. 45,092 11. In the report of last year it was pointed out that the surest proof of the efficacy of inoculation was afforded by the continued immunity of the Laboratory staff, who in connection with their daily work are constantly in contact with plague-infected rats and fleas. Yet the staff numbering 116 persons who are regularly inoculated every year, escape infection. Comparative figures of plague incidence and mortality amongst the treated and untreated are cited for various towns, and afford ample evidence in favour of the measure.

An investigation of the fecundity of *mus rattus* showed that a single pair might produce over 100 young in 16 months. A series of experiments was carried out in connection with an outbreak of plague amongst a nomadic race of fishermen and wild fowling in Sistan, which showed that rat fleas are not carried by ducks. An investigation on the pulmonary power of the sun showed that the factor which is chiefly operative is heat. A simple expedient for flea destruction is thus available. It is necessary only to spread flea-infested clothing on a sandy place which has been warmed by the sun, and to leave it there for the space of an hour. The results of this investigation have been published as No. 40 of the Scientific Memoirs.

On behalf of the Health Officer, Bombay City, 119,456 rats were subjected to post-mortem examination, and 11,493 were found to be plague-infected. A considerable number of medical men received instruction in the examination of rats, and the diagnosis of plague in them. Many were also shown the methods employed for the manufacture of anti-plague vaccine, and others instructed in the technique of inoculation work.

There was an increase in the work done by the Laboratory as the provincial Institution. 1,257 pathological fluids, 263 tumours and other tissues, and 84 brains of dogs dying of symptoms suspicious of rabies were examined. During the year 105 snakes were received for the extraction of venom, and experiments were carried out to test the value of certain reputed antidotes of a chemical nature for the venoms of Cobra and Russell's Viper, which however were proved to be useless.

In research work an improved method of employing the Horbit-Fleming complement-dissolution reaction was worked out by Captain W. D. H. Stevenson, M.S., and important results were obtained from the examination of the sera of syphilitics and leprosy by this method.

Captain T. S. B. Williams, M.S., continued his investigations on the Bacteriology and Treatment of Leprosy, the results of which have been published as No. 42 of the Scientific Memoirs. Experiments on animals in the

treatment of snake bite—Russell's Viper, and the Cobra—showed that the immediate local application of potassium permanganate after free incision did not prevent death. A large amount of work was done in connection with vaccine therapy. Many interesting cases have been examined and treated in the Bombay hospitals. During the year, 243 autogenous vaccines have been prepared for special cases, in addition to stock vaccines of various kinds. Therapeutic sera from the Lister Institute are stored for sale.

The report of the Micro Biological Section of the *King Institute of Preventive Medicine* shows a considerable increase in the amount of work performed. In the period under review the systematic examination of the water supplies of the Presidency was continued, each supply being examined once a quarter. The water-supplies of jails in the Presidency were examined half yearly. The amount of pathological and other material sent for examination continued to increase, and during the year 3,397 specimens were received.

An investigation as to the presence of the organism of syphilis in still born fetuses of a particular type, which are extruded in a macerated condition, was commenced. In 10 out of 40 of these the *spirochæta pallida* was demonstrated.

The usual courses in Minor Sanitary Engineering and in Vaccination were held during the year, and were attended by 43 and 30 students, respectively.

The work of the Vaccine Section of the Institute has been noticed in Section V of this report.

At the *Pasteur Institute, Kasauli*, the number of patients afforded anti rabic treatment during 1910 was 2,073, an increase of 136 on the number of the previous year. The total number of patients excludes 328 individuals who applied for advice, but whom it was considered unnecessary to treat. Of the total, 354 were Europeans, and 1,719 were natives, compared with 50 and 1,437, respectively, in the previous year. From the British Army there were 136 patients, and from the Native Army (including British officers, their wives and children) 167, whilst European civilians numbered 165 and Native civilians 1,615.

There were 20 deaths from hydrophobia among those treated, giving a mortality of 1.25 per cent, but excluding those who died during treatment or within 15 days of its completion, the number of failures falls to 4 only, giving a ratio of 0.19 per cent, which is the lowest annual rate since the institute was opened. The experience of the institute as regards anti rabic treatment over a period of ten years is reviewed, and many interesting statistical results on the association between degree of wounding, number of wounds, interposition of clothing, cauterisation, et cetera, and liability to infection are given.

The work of the institute as a Provincial Bacteriological Laboratory included the examination of 1,438 specimens, of which 814 were from the Punjab.

At the *Pasteur Institute of Southern India, Coonoor*, 827 persons were treated, compared with 658 in the previous year. Of the total 149 were Europeans, 73 Eurasians, and 606 Natives. During the year there were 17 deaths, three of which occurred during the treatment, 8 within 15 days of completion of treatment, and 6 more than 15 days after. The percentage of failure of deaths which occurred during treatment or within 15 days of its completion be omitted, was 0.72, but if a failure be reckoned for comparative purposes as a death occurring more than 33 days after the commencement of treatment, then the ratio is 0.36.

Investigations were carried out in connection with rabies, and on the problem of immunity in general. These have been published in Bulletin No III of the Institute.

Papers on the physical chemistry of immunity, and the mathematics of Epidemiology and Bacterial Bionomics have also been published.

The Plague Research Commission continued their investigations into the etiology of plague, their head-

quarters being at the Bombay Bacteriological Laboratory. An officer was detailed to enquire into the reasons why epidemics of bubonic plague were so rare in Eastern Bengal and Assam, while they flourished in Behar. An examination of rats and fleas in certain selected places was made, and it was found that the average numbers of *M. rattus* per 100 traps set were in Dacca and Chittagong 10 and 10.5, respectively, whereas in Bhagulpur (Behar) the ratio was 31.4. It was concluded therefore that the Province of Eastern Bengal and Assam has escaped plague mainly because rats are scarce in the houses, the reason of this being the construction and arrangement of the houses and their cleanliness. An investigation was also instituted to enquire into the comparative freedom of Madras from plague. In the city it was found that *M. rattus* was abundantly present, that the susceptibility to plague of the Madras rat was much greater than that of the rats in Bombay at the present time, that the number of fleas per rat was little lower than it is in Bombay. The study of this perplexing problem has not yet been completed. In Bombay a series of *godown* experiments was carried out which showed that material epidemics of plague amongst rats can only occur when fleas are present and that the severity of such epidemics is proportional to the number of fleas. The survivors of many of these epizootics were tested as to their immunity to plague by comparing their resistance to subcutaneous infection with that of normal Bombay rats. It was found that the survivors were highly resistant, but not in a markedly greater proportion than could be accounted for by survival of the fittest. Observations on the immunity of Bombay rats led to further experiments, in which the relative immunities of rats obtained from places, which had suffered in various degrees from plague were compared with that of Bombay. It was found that on subcutaneous inoculation the percentage of rats which succumbed to plague was 91 for Madras, 44 for Bombay, 57 for Bhagulpur and 26 for Poona. Experiments were then carried out to ascertain whether this immunity was acquired or inherited. Two classes of rats were used to settle this point, in the one instance those caught by traps in Bombay, and in the other those of a generation which had been bred from rats caught in Bombay. Of the former class 37.5 died, and of the latter 33.4. The Commission concludes that one effect of the plague epizootic is the establishment, by a process of natural selection, and survival of the fittest, of a more resistant race.

Leprosy—In No 42 of the Scientific Memoirs by officers of the Medical and Sanitary Departments of the Government of India, are detailed the researches of Major E. R. Rost and Captain T. S. B. Williams, M.S., on the cultivation of the *Leprosy bacillus*. It appears that the organisms cultivated, under widely different conditions, by these observers are in all probability identical. The ultimate result has been the production of an acid fast organism which is a pleomorphic streptothrix and which has the power of producing a marked reaction in lepers.

Vaccines have been prepared from these organisms, and Major Rost describes in his paper very satisfactory results from their use. In Bombay vaccines are in use which were prepared at first from the streptothrix growth on milk and later from the bacillary form of the organism grown from Rost's Medium. It is stated that the results of treatment by lepers by this method are most encouraging.

Malaria—The Transactions of the Committee for the Study of Malaria in India, during the last year have been published as Nos. 2 and 3 of *Paludism*. It is only possible for me to give a brief summary of the work which has been done.

I—Work of the Central Committee

Three courses of instruction have been held at Amritsar, from 15th March to 30th April 1910, from 15th October to 26th November 1910, and from 15th

March to 30th April 1911. The last was attended by three officers of the Royal Army Medical Corps, four of the Indian Medical Service, two Military Assistant-Surgeons, six Civil Assistant Surgeons, two Sub Assistant Surgeons and a Medical Officer of Health from the Mysore State.

The collection of Indian anopheles at the Central Malaria Bureau is practically complete, and many specimens of Culicidæ and of larva eating fish have been received.

II—Measures undertaken in the several Provinces

Madras—A Malaria Board is to be constituted and a special malaria officer is to be deputed for three years. Another officer, Major Perry, I.M.S., has been deputed under the instructions of the Central Committee to investigate the malarial circumstances of the Jeypore Agency in this Presidency. In some parts of the area of investigation malaria is very severely prevalent and in others only very moderately so, and it is hoped that important practical results in connection with the best methods of preventing malaria will accrue if the causes of the variations of malarial intensity can be ascertained. In 1910 the practical anti-malarial measures carried out in the Presidency included the introduction of effective drainage in different places, the filling up of useless ponds and pits, the prohibition of wet cultivation in proximity to dwellings, the destruction of mosquito larvae by petiolage and the free distribution of quinine in malarious areas.

Bombay—The Sanitary Board has been appointed the Provincial Committee for dealing with malaria. One of the Deputy Sanitary Commissioners, Major Hutchinson, I.M.S., attended the first malaria class at Amritsar, and on his return arrangements were made for the collection and compilation of mortality statistics on the lines recommended by the Central Committee. For the investigation of malaria in Bombay City, Dr C. A. Bentley was on special duty from 1909 to 1911 and his valuable final report has been published. It indicates that in Bombay carefully devised measures for the destruction of the dangerous species of anopheles mosquito would very probably result in complete eradication of malaria from the city. The other anti-malarial measures carried out in this Presidency during 1910 included the deputation of 27 sub assistant surgeons to carry out operations for the mitigation of malaria in certain selected districts.

Bengal—The Sanitary Board is the Provincial Committee for dealing with malaria. A specially trained officer, Major Fry, I.M.S., has been appointed for malaria research in the province, and has been provided with a staff of assistants which will be increased as necessity arises. The anti-malarial measures carried out in 1910, included minor measures of draining and petiolage in several towns and the construction of permanent masonry surface drains. For the free distribution of quinine in affected districts, 23 sub assistant surgeons were deputed. A proposal from the Local Government for a special engineering establishment for drainage schemes is under consideration.

United Provinces—Major J. C. Robertson, I.M.S.,* was placed on special duty for malaria research in November 1908, and during the remainder of that year and the greater part of 1909, Captain J. D. Graham, I.M.S., was also engaged in that work. In March 1910, the latter officer was deputed to attend the malaria class at Amritsar, and in May he took over the duties of special malaria officer and has continued to perform them since. A Provincial Committee and eight Divisional Committees have also been established in these provinces, and during 1910 various important enquiries into the malarial circumstances of towns and rural areas, as well as valuable educational and other measures for popularizing the use of quinine and making the drug available to

the poor, were actively carried on. In four selected districts travelling dispensaries toured from village to village giving medical relief to persons suffering from malaria and other diseases.

Punjab—An influential Provincial Committee for dealing with malaria has been appointed, and a specially trained officer, Lieutenant Colonel J. R. Adie, I.M.S., with an adequate staff has been deputed as chief malaria officer. During recent years large quantities of quinine have been distributed gratuitously by various agencies. Early in 1909, Major Christophers, I.M.S., was placed on special duty to investigate the causes of the terrible epidemics of malaria which from time to time affect this province. His report has been published as No. 46 of the Scientific Memoirs. It shows that periodical flooding is an important factor in the causation of epidemics of malaria in this province, and that the measures necessary for their prevention and control may quite possibly come within the range of practical politics. This matter is now under consideration.

Eastern Bengal and Assam—In 1907 the Duars Planters' Association approached the Government of this province with a memorial requesting that the services of experts should be procured to enquire into the nature and causes of Blackwater and other fevers and to suggest remedial measures. As a result, the Government of India ordered a special enquiry to be conducted by the Central Research Institute, assisted by an Advisory Committee. Major Christophers and Dr Bentley were entrusted with the scientific portion of the investigations and their report upon Blackwater Fever, which was published in 1908, as No. 35 of the Scientific Memoirs, is almost universally regarded as settling finally the vexed questions with regard to the etiology of that dangerous disease. A large proportion of the planters in the Duars have taken action in accordance with the findings of the report, and the result has been a great diminution in the number of cases of Blackwater Fever and a much reduced amount of malaria among them. The second report by the same officers on malaria in the Duars was written in 1909 and in view of the importance of the results recorded in it, the local Government in March 1910 appointed a committee to enquire into the sanitary and economic conditions under which the tea garden coolies live. Both reports are about to be published and action upon them is being taken. In addition a very complete organisation for dealing with malaria in this province has been established. Among the anti-malarial measures adopted, in addition to organised attempts at mosquito reduction, is a new system for supplying quinine in a very effective and cheap form. The system is described in detail on page 93 of No. 2 of "PALUDISM." Six quinine demonstration camps will also be established, and various important methods of educating the people in measures for the prevention of malaria form a noteworthy feature of the scheme in this province.

Burma—A Provincial Malaria Committee has been formed, and Major Lolo, I.M.S., has been employed solely in malaria work.

Central Provinces—The Sanitary Board is the Provincial Committee and a specially trained officer, Major Kenrick, I.M.S., has been appointed special malaria officer. The investigations were commenced in October 1910, and some results of them will be found on page 98 of "PALUDISM" No. 2 and page 24 of No. 3.

III—Special malarial investigations

Sahanpur—During the year 1909 Major J. C. Robertson, I.M.S., carried out an extensive investigation into the conditions prevailing in this city. The spleen and parasitic indices taken over the whole were 78.8 and 53.8 respectively. It was found that marginal areas were more highly affected than central ones, an observation of great value in connection with the spread of mosquitos into a free area, as the breeding places of carriers were found to encircle the city. In a report to the local Government are given maps of the distribution

* Since appointed Sanitary Commissioner with the Govt of India.

of malaria according to spleen rate, according to mortality rate, and, according to breeding places of carriers, and point at once to the conclusion that the chief cause of malaria in Saharanpur is irrigation which is beyond the capacity of the natural drainage of the place.

Major Robertson concludes by recommending modifications in the irrigation system, and the treatment of the infected by quinine.

Nagina—Major Robertson also carried out a similar investigation in Nagina, United Provinces. The general spleen rate in this town was 79.1 per cent. Maps of spleen rate and of malarial mortality rate showed as in Saharanpur the existence of an island of lower infection in the heart of the town and a map of breeding places of carriers shows then peripheral distribution. These are of the nature of tanks, a canal, and rice fields at the edges of the tanks. He recommends a progressive policy of filling up tanks, of substituting other crops for rice and at a later date that the canal which is at present close to the town should be deviated. And as in the case of Saharanpur he would treat the infected by quinine.

Three other towns in the United Provinces have been surveyed by Major Robertson and Captain Graham and reports are in course of publication. It is hoped that this progressive definite policy will be extended to other parts of India, as it is primarily a policy which clears the way for action.

Bombay—An investigation into the conditions affecting malaria in Bombay was commenced by Captain A. G. McKendrick, M.S. (with the advice of Sir Ronald Ross), in January 1909, and carried out from May 1909 until the end of 1910 by Dr. C. A. Bentley.

In this city the average spleen rate throughout the whole island was 7.2 per cent. This low figure is due to the fact that infection is limited to certain definite areas in the south of the island where the spleen rate rises to over 29.9 per cent.

These areas correspond to the breeding places of *N. stephensi*, a mosquito which was proved to be the carrier in Bombay by Major W. Glen Luston, M.S., in 1908. In an exhaustive report by Dr. C. A. Bentley all the factors affecting the prevalence and distribution of malaria are studied, and it is shown that the most dangerous permanent breeding places of the malaria carrier are the house wells in the Fort and in Dhobi Talao. Permanent measures taken as regards these, and temporary measures in the New Dock works would eradicate the evil.

Malaria in the Punjab—In No. 46 of the Scientific Memoirs are published the results of an investigation carried out by Major S. R. Christophers during the year 1909.

In the exceptionally severe epidemic of 1908 it is shown that there existed two distinct major foci, one in the north affecting Gujrat, Gujranwala and Shikhpur, and one in the south east involving Gujrat, Delhi, and parts of the Rohtak districts, which is continued into the United Provinces.

These foci are, however, not the same as those which were marked in previous epidemics, nor do they coincide with the areas of heaviest rainfall. It was found that when epidemic areas are examined in detail the villages are observed to have suffered almost exactly in proportion as they have been flooded. Floods act equally whether they are due to local rainfall, or to the indirect effects of rain causing the overflow of rivers. This explains why epidemic areas are not exactly coincident with the areas of heaviest rainfall and why the former almost always overlaps the latter in the direction of the drainage.

Special surveys were carried out in some detail in Amritsar and Delhi, and some of the conditions prevailing in Bhera, Palwal, Mirat and Gujrat were examined.

Amritsar—The spleen rate was found to show a concentric gradation, varying from 14 per cent in the centre to 75 per cent, in the periphery, and this was

observed to correspond with the distribution of the breeding places of the carrying mosquitos. These were of the nature of large weedy tanks, and submerged waste land and fields.

Delhi—Breeding places were found to occur chiefly in the bed of the Jumna, and in swampy parts of the Bela. The areas of malaria prevalence, and spleen of high rate were for the most part in proximity to the river. A complete survey was not made.

Palwal—Is an example of a small town situated in a water logged area. In an outlying quarter the spleen rate amongst 30 children examined was 97 per cent and amongst 16 children in the central area it was 62 per cent. Over the whole town the spleen rate amongst 147 children examined was 88 per cent. In the epidemic of 1908, Palwal was surrounded by standing water.

Experiments were conducted with proteosoma on sparrows which show that severity of infection is largely dependent on the dose inoculated. This is not merely a matter of the number of infected mosquitos, but of the number of sporozoites injected at each bite. And this in turn depends upon the number of gametes in the blood of the original sparrow by which the mosquito was infected. The report also includes the calculation of correlation factors, and the author's figures show a high correlation between intensity of an epidemic, on the one hand, and rainfall, deficiency of rainfall in the previous year, and famine conditions which lessen the resistance of the individual against the disease.

The second *Malarial Conference* was held at Bombay on November 16th and 17th, 1910. The proceedings have been published in No. 4 of *PALUDISM*.

The following resolutions were passed—

I.—This Conference is of opinion that researches by experts in the field, such as those carried out by Christophers and Bentley, prove the value of preliminary scientific investigation, and seem to point to the probability that anti mosquito measures may not prove so costly as was at one time feared.

II.—The Conference believes that no one measure can be suitable for all the conditions that favour the prevalence of malaria, that quinine prophylaxis applied to a free population is difficult to carry out in the thorough way necessary for success, and that a combination of several measures may be required in local circumstances may indicate. The Conference is of opinion that, notwithstanding the difficulties of quinine prophylaxis, it cannot be too strongly emphasized that under the peculiar conditions of the Indian populace arrangements for the treatment of quinine of those sick from malaria is a matter of primary importance from the point of view of saving life, of preventing suffering, and of destroying a potent source of infection.

III.—The Conference desires to call the attention of Government to the possibility of danger arising from borrow pits in the proximity to human habitations, especially when such excavation would result in stagnation of water therein.

IV.—The Conference is of opinion that the education of the people is a most important anti malarial measure, and that every effort should be made to secure the cooperation of the public without which there is little hope that the campaign against malaria will ever be crowned with success. They believe that instruction in villages and towns are the best methods of propaganda, and that in this way information is more likely to reach the people than by the publication of pamphlets and posters.

V.—The Conference while strongly recommending the prosecution of further research is of opinion that although expert investigation is still necessary, enough is known as to the breeding habits of mosquitos, etc., to make it frequently possible for trained workers to deal with malaria in an efficient manner.

VI.—In view of the possibility of the importation of Yellow Fever into India, the Conference suggests the advisability of a careful 'Stegomyia' survey and of the

education of the public in the matter of destruction of domestic mosquitos

Since the issue of the last report the following ten numbers of the Scientific Memoirs have been published —

No 39 —The applicability to Medico Legal practice in India of the Bio chemical tests for the origin of blood stains, by Lieutenant Colonel W D Sutherland, M B, I M S No 40 —The destruction of fleas by exposure to the sun, by Captain J Cunningham, M D, I M S No 41 —Quinine and its salts, their solubility and absorbability, by Captain A C MacGilchrist, M A, M D, I M S No 42 —The cultivation of the bacillus of leprosy and the treatment of cases by means of a vaccine prepared from the cultivations, by Major E R Rost, I M S No 43 —The relation of tetanus to the hypodermic or intra muscular injection of quinine, by Lieutenant Colonel Sir D Semple, Kt M D No 44 —The preparation of a safe and efficient anti rabic vaccine, by Lieutenant Colonel Sir D Semple, Kt, M D No 45 —Epidemic Diarrhoea in Calcutta, first report by Major E D W Greig, M D, I M S No 46 —Malaria in the Punjab, by Major S R Christophers, M B, I M S No 47 —Dysentery and Liver Abscess in Bombay, by Major E D W Greig, M D, I M S, and Captain R T Wells M A, M B, I M S No 48 —Investigation into the Jail Dietaries of the United Provinces, by Major D McCoy, I M S No 49 —Epidemic Diarrhoea in Calcutta, Final Report, by Major E D W Greig, M D, I M S

Nos 2, 3 and 4 of PALUDISM, being the Transactions of the Committee for the Study of Malaria in India, have also been published

SANITARY MEASURES TAKEN DURING THE YEAR 1911-12 IN INDIA

The following memorandum by Surgeon-General Sir Pardey Lukis gives a full account of the measures taken up to September last for the eradication of plague and malaria in India

It was published for the information of members of the Imperial Council of India

(a) Malaria

(1) A special malarial board has been constituted in Madras, and the Secretary of State has sanctioned the employment for three years on malarial work of a specially trained medical officer and an Assistant-Surgeon, in addition to the staff employed by the local Government Captain Hoine, I M S, has been selected for this purpose

(2) Sanction has been accorded to the extension of the deputation of the special malarial officers in Burma and the United Provinces for further periods of one and two years, respectively

(3) Modifications have been made in the method of selecting officers to attend the malaria classes at Amritsar Under the new arrangements it will be possible for any officer, who is seriously desirous of studying malaria, to gain admission The class has also been enlarged so as to include both military medical officers and those in civil employ, and 32 officers have been selected to attend the class which will be held this month

(4) The second Malaria Conference was convened at Bombay in November last and the proceedings have been published in the Annual Report of the Sanitary Commissioner with the Government of India for 1910 This Conference unanimously passed a series of resolutions pointing out the

importance of instituting anti-mosquito measures wherever practicable in addition to making free use of quinine both for purposes of prophylaxis and treatment

The Government have decided that the observations of Majors Laston and Christophers and of Dr. Bentley have shown that these measures may not prove as impossible a task as was formerly supposed, and it is proposed therefore to carry out anti-malarial operations in certain selected towns where a careful malarial survey has shown that the problem is one capable of practical solution

(5) Experiments are being carried out in several of our large hospitals with a view to deciding what is the best preparation of quinine for general use and also the most efficient method of administration so as to obtain the full therapeutic effect In addition to this, allotments of 3 lakhs in each case have been made for the formation of a reserve stock of quinine in Bengal and Madras

(b) Plague

(1) The Plague Advisory Committee continued its useful work under the direction in India of Major Laston Two additional officers have been placed at the disposal of the Committee to carry out further observation on local immunity in Madras and the United Provinces, and in the laboratory at Parel important experiments are being carried out with a view to solving the difficult problem of the disinfection of gram bags without damage to their contents

(2) Dr G F Petric was deputed to investigate the outbreak of pneumonic plague in Manchuria and his reports are now under consideration

(3) A system of travelling dispensaries has been introduced into the United Provinces with the very best results This system is an extension of, and improvement upon, that which has existed in the Punjab since 1907

(c) Yellow Fever

In view of the danger which will arise with the opening of the Panama Canal in 1913, Major James has been deputed to the endemic area of yellow fever to study the disease and to formulate a scheme for preventing its introduction into India In the meantime, local Governments are being addressed with a view to instituting a careful mosquito survey in order that we may have accurate information as regards the distribution at the various ports of the particular mosquito which is known to be the carrier of the disease in the West Indies

(d) Sleeping Sickness

In view of the possibility that this disease may be introduced into India from Africa, rules have been framed for the examination of suspected vessels and persons arriving from the East Coast of Africa, and a notification is about to issue prohibiting the importation of antelopes from Africa. Advantage has also been taken of the return of Captain Mackie from the Sleeping Sickness

Commission to obtain the sanction of the Royal Society to the publishing of a pamphlet in popular form giving full information as to the present state of our knowledge of this disease. The pamphlet is now in the press and will be published shortly.

(e) *General Sanitation*

Septic Tanks—This is a great difficulty in India. The data on which sanitarians work in England are of little use in India, owing to the fact that we have here to deal with a population who are largely vegetarians. Excellent experimental work has already been carried out in Bengal by Major Clemesha and in Dacca by Captain Gornley, and an experimental installation on a large scale has now been inaugurated at Poona under Captain Hutchinson, I.M.S. It is hoped that, as the result of these experiments, reliable data for the designing and efficient working of installations for disposal of sewage by the bacterial method in this country will be available by the end of the year.

(f) *Infant Mortality*

This important subject was discussed at the first Sanitary Conference. In addition to this the Government of India deputed Major Greig as then representative at the Congress for the protection of infants at the breast which met at Berlin in September 1911. His report, together with a number of important papers and publications, dealing with the problem of infant protection is now under examination and investigation.

(g) *Development of Research Institutes*

Under this head come the grants for the development of the Central Research Institute at Kasauli and the Bombay Bacteriological Laboratory at Parel, and for the construction of a Bacteriological Laboratory in Burma.

At Kasauli it is proposed to constitute a separate Serum and Vaccine Department in order to meet the growing demand for curative sera of all kinds, and also to create three separate bureaux—one for general epidemiological research, one for protozoology, and one for malaria.

At Parel it is intended to enlarge and improve the present laboratories so as to fit them for teaching purposes, with a view to the institution of post-graduate classes such as are now held at Kasauli. These laboratories will, it is hoped, ultimately form part of a school of Tropical Medicine to be established in connection with the King Edward Memorial Hospital, which is to be built in close proximity to the Parel Laboratory.

(h) *The Tropical School of Medicine at Calcutta*

This grant is intended to cover the construction of laboratories and research rooms for this school which will be worked in connection with the Calcutta Medical College and which will be open to all qualified practitioners for post-graduate study. The Government of India has also agreed to meet the recurring charges for the additional teaching staff. In connection with this school it is hoped

that the Calcutta University will institute a Diploma in Tropical Medicine, similar to those granted at Liverpool and Greenwich.

(i) *The Indian Research Fund*

The first meeting of the Scientific Advisory Body was held at Bombay on November 15th, 1911, when it was decided—

- (a) to defray the cost of Major James' deputation to the endemic area of yellow fever,
- (b) to make certain grants for the purchase of scientific literature,
- (c) to start a fresh series of investigations into the problems connected with cholera and Kala-azar,
- (d) to formulate proposals for the co-ordination of work on medical entomology,
- (e) to form a committee to enquire into the present method of registering vital statistics and to study the causes of decrease in population—also to consider the important questions of town-planning and of popular hygienic education and propagandism.

The enquiry into Kala-azar has already commenced. The Madras Government has deputed Captain Patton for a period of six months to work on this subject in Royapuram and its neighbourhood, and the Research Fund are appointing for the same purpose Captain Mackie (who has recently returned from the Sleeping Sickness Commission), and are associating with him an Indian gentleman, Dr Korke, who has been specially trained under Sir Ronald Ross at the Liverpool School of Tropical Medicine. Captain Mackie will probably work in Assam, and the general lines of the investigation have been worked out by a Committee consisting of Surgeon-General Bannerman, Major Christophers and Dr Bentley.

The cholera investigation will also start immediately, the two workers detailed for this being Major Greig and Captain Gloster, whilst the details of the investigation have been worked out by Sir David Semple and Major Leonard Rogers, whose work in connection with cholera is so well known.

The report of the Provisional Committee on the Study of Medical Entomology has been received and is now under consideration.

Sanitary Progress in Bengal

Within recent years there has been a considerable advancement in what may be called scientific sanitation in Bengal. A careful study has been made of the biological process of treatments of sewage and an ingenious arrangement known as the Septic Tank Latrine which consists of a latrine built actually on the roof of septic tank has been in extensive use. These latrine arrangements are particularly useful for communities such as the labour of a mill, for jails, schools, etc. After considerable study the design of these arrangements is now practically perfect. A careful study

is now going on into the chemistry of Calcutta sewage in order to ascertain certain fundamental facts which probably apply to all oriental sewage—(*Vide* Clemesha's "Sewage Disposal in the Tropics")

The bacteriology of drinking waters in India has also received considerable attention. The work done at the King Institute in Madras and in Bengal (by Major Clemesha and his assistants) show very clearly that very radical differences exist between waters in India and in Europe. If European standard of purity were rigidly adhered to, we should have practically no water fit to drink in India. Obviously a study of the self-purification of surface water is necessary. This has been carried out and very interesting results have been obtained. It has been shown that this process divides itself into several very distinct stages which can be recognised by the water analysts.

A careful research into the malaria in Bengal has been commenced, and a preliminary survey of the whole Presidency is complete. A more detailed survey is now in progress in various portions of the Presidency. It has been thought desirable to push the sale of quinine in the hyper-endemic areas and an elaborate arrangement for the sale of quinine in "treatments" has been commenced. Many very interesting facts concerning the conditions under which malaria spreads are being worked out.

THE MEDICAL SERVICES IN 1911

Though the year 1911 has been one of peace, except for the small Abor Expedition on the North-East frontier towards the close of the year, it has been marked by events of some importance, to the I M S at least, the new pension rules, the settlement of the fee question, the administrative changes in Bengal, the darbar honours, and a free flow of promotion.

The grant of graduated pensions, rising gradually in amount from seventeen to thirty years, especially of those from twenty-five to thirty years, will be of much service to individuals, and should tend in future to quicken promotion to the higher ranks. It also renders impossible in the I M S, such a case as that of an unfortunate officer of the R A M C, who, during the past year, was retired for age, with twenty-nine years and 364 days' service, receiving only the twenty-five year pension, and missing that for thirty years by one day.

The orders on the subject of fees from Indian chiefs and gentlemen of high rank, published on 2nd February 1911, and again, with modifications, on 23rd December, form a settlement, on terms reasonable to both sides of a question of considerable difficulty, and one which has been the cause of much friction and ill-feeling during the past twelve years.

The administrative changes in Bengal, announced at the Delhi Darbar in December, are

extensive, and are calculated to give rise to considerable differences of opinion, felt at least, if perhaps not expressed. With the political aspect and effects of these changes we are not concerned, but only with their bearings on medical administration. Previous to 1905, the unwieldy province of Bengal had as A M O an officer of the rank of Colonel, with the title of Inspector-General of Civil Hospitals, another officer of the same rank carrying on the medical administration, military, civil, and sanitary, of the small province of Assam. After the alterations made in October 1905, when Eastern Bengal was cut off from the main province, and combined with Assam into a new Lieutenant-Governorship, each of the two provinces had a Colonel, with the title of Inspector-General as A M O, and each had also a Sanitary Commissioner. Now Bengal has again been recombined into one province, with a Governor, on the same footing as Madras and Bombay, while the three small provinces of Bihar, Chutia Nagpur, and Orissa, are cut off from Bengal and formed into a new Lieutenant-Governorship, and Assam again becomes a Chief Commissionership. What effect will these changes have on medical administration? Bengal, of course, has kept its I G C H, and it is to be hoped that he will get the rank and title of Surgeon-General, as in Madras and Bombay. A new I G C H has been appointed for the Province of Bihar and Orissa, and an I G of Civil Hospitals and of Prisons with a Deputy Sanitary Commissioner has been appointed for Assam.

In the new arrangement Bihar gets almost all of the popular and pleasant districts formerly under the Lieutenant-Governor of Bengal, while all the unpopular ones, placed in the Eastern province in 1905, came back into Bengal. In most departments, service in Bihar will be more popular than in Bengal, and there will be much competition for employment in the new province. This should be less felt in the I M S than in the other services. For presumably the men serving in Bengal proper will retain the first claim on the lucrative and important medical appointments in Calcutta, to which men in Bihar will have no more claim than will those serving in the U P or the Panjab.

The I M S received a liberal share of the honours conferred at the Delhi Darbar. The well-earned Knighthoods of the Star of India, bestowed on the Director-General, Sir Pardey Lukis, and of the Indian Empire, conferred on Sir Arthur Branfoot, President of the Medical Board of the India Office, are a source of gratification to the whole service, which is honoured in the persons of its highest officers. Sir Arthur Branfoot, indeed, received the C I E in May 1888, nearly a quarter of a century ago, the only wonder is, that promotion in the order had been so long delayed. The Surgeon-General of Madras and the I G C H of Bengal each received the C S I, and another well-merited decoration was the C I E bestowed on Major Leonard Rogers for his valuable work on

fevers and cholera. The Darbar was an Indian function, but the R A M C was not left out, Surgeon-General Trevor, P M O, H M's Forces in India receiving a K C S I, and Lieut-Colonel Alltridge a C S I. No Bombay Medical Officer figures in the list. The C I E conferred on Lieut-Colonel Frenchman is, we think, the first decoration earned by an Indian member of the I M S, and that given to Major Elwes is the first civil order, other than the Kaiser-i-Hind medal, bestowed on a member of the I M S general list.

The flow of promotion has been brisk throughout the year, except in the Bombay Service, in which no step went in 1911. That service, however, had got so far ahead of the others that it can well afford to mark time for a while. And, with an officer of less than twenty-five years' service acting as a full Colonel, and men reaching the selected list at twenty-three years, Bombay has nothing of which to complain.

In the R A M C there were two promotions to Surgeon-General, and thirteen, including one Brevet, to Colonels, most of the steps to the latter rank going to men of between twenty-nine and thirty years' service. The highest post in India, that of P M O, H M's forces, changed hands on the last day of the year, when Surgeon-General A. T. Sloggett took over charge from Sir Francis Trevor, and is in future to be entitled Director, Medical Services, India.

In Bengal there were two steps to Colonel, one on the first day of the year, caused by the late Colonel Cunningham's death on 31st December 1910, and a second in April. Several of the senior Lieut-Colonels having gone home on leave prior to retirement, this last step went to the seventh on the list, who thus got his promotion with just twenty-seven years' service, and at first fifty years of age, a more reasonable time than that of thirty-one and a half years' service, at which promotion went in more than one case in 1910. The junior Bengal Officer on the selected list on 31st December 1911, reached his position with twenty-five years' service, and, while Bengal has dropped behind Madras and Bombay in the rate of promotion to the selected list, the men now being promoted in Bengal are a good deal better off than their predecessors a few years ago, who took from twenty-seven to twenty-eight years to reach that position.

In Madras, when the highest appointment fell vacant by Surgeon-General Benson's retirement, the Government went a good way down the list to select his successor, thus following the precedent set in the cases of the present Surgeon-General of Bombay and Director-General. There were two other steps to Colonel in Madras, both the officers promoted reaching that rank with under thirty years' service, while the junior Madras officer on the selected list attained that position with only twenty-one years' service, a wonderful contrast to the state of affairs only two years ago. The senior Lieutenant-Colonel in Madras

put in over twenty-eight and a half years' service before he reached the selected list in April 1910.

The following table shows the length of service of the junior Colonel and of the junior selected Lieut-Colonel in each of the three Presidencies, when they reached that rank, as given in the Indian Army List of January 1912 —

	Bengal	Madras	Bombay
Colonel	27 0	29 8	26 9
Selected Lt Colonel	25 2	21 4	23 1

Before many years are over, promotion to the selected list in Madras and Bombay will, it seems come to an end, for want of any more men left unpromoted. It will be interesting to see what happens then, whether the vacancies will be filled up by Bengal men, of whom there will still be many left unpromoted, or whether they will simply be left unfilled.

The rapidity of promotion in Madras also seems likely to raise another question, can an officer become a "Lieut-Colonel on the selected list" while still holding the rank of Major only?

During 1911 the hand of death has been heavy on the Bengal Service, which within two months lost Lieut-Colonel J. W. T. Leslie, Sanitary Commissioner with the Government of India, Major G. Lamb, Director of the Pasteur Institute, and Major C. J. Robertson Milne, Superintendent of Barhampur Lunatic Asylum, all three men of repute, and all members of the scientific branch. Eleven officers on the retired list also passed over to the majority, of whom the best known were Surgeon-General W. B. Beatson and Colonel W. P. Warburton. No death occurred on the active list of either the Madras or the Bombay Service during the year, but while eight officers on the Bombay retired list, including Brigade Surgeons I. B. Lyon and Sir Henri Blanc, died during 1911, Madras lost only one. Out of the total of twenty deaths of retired officers, thirteen were men of the old Company's Army. The survivors of the Crimea and of the Mutiny are now rapidly dropping off, which is not surprising, considering that these campaigns were both fought well over half a century ago. Surgeon-Major H. B. Hinton, however, still retains his place as the senior living officer on the retired list. Born on 7th March 1813, and commissioned on 13th January 1839, if he is really still alive, he must now be ninety-nine years old, and seventy-three years have elapsed since he entered the service. Eight other officers still survive, who entered before 1850.

Among the junior men, on the general list, two deaths occurred during the year, and in the R A M C only four, a small number considering the strength of that service, while the deaths of retired officers were under thirty. The names which strike us as most familiar are those of Surgeon-Generals J. A. Marston and R. W. Meadows, D. S. G.'s, A. G. Elkington, once of the Guards,

and R W Clifton, Surgeon T Lagertwood of Chelsea Hospital, a Crimean veteran, and Captain G S Nickerson, who left the R A M C three years ago for employment as a Civil Administrator in the Soudan

Though not members of the services, we may also mention the deaths of Dr J D Gregorson, a planter's doctor in Assam, whose murder along with Mr Noel Williamson, led to the Abor Expedition, of Dr David Peachy, long a Civil Surgeon in Bengal, the oldest European doctor in India, of Dr J M Comley, the senior practitioner in Calcutta, and of Surgeon-Major R E Wrafter, of the I S M D, a survivor of the Panjab campaign, and for twenty years a Civil Surgeon in the Panjab

By orders issued on 8th August 1911, the honour of appointment as Honorary Physician or Surgeon to the King, was restricted to officers on the active list, who will in future resign the post on retirement. Hitherto these honours have been almost exclusively conferred on officers on the retired list, who held the appointment for life. All the twelve officers who at present hold these titles are on the retired list, and will presumably continue to hold them for life. A few distinguished retired officers who might reasonably have expected under the old rules to succeed in their turn to these honours will now be unable to do so. But, on the other hand, a much larger number of men will, in future, attain the position in turn.

The late Lieut-Colonel J W T Leshe, who died at Marseilles, on his way home on furlough, on 27th March, held the post of Sanitary Commissioner with the Government of India. This appointment was doubled up with that of the Surgeon-General or Director-General, from 1880 to 1904, when it was again made a separate appointment and filled by Colonel Leshe. During his absence on furlough, and since his death, the duties of the post were again carried on by the Director-General till the appointment of Major Robertson, I M S, in May 1912.

During 1911 the titles of Surgeon-General and Deputy Surgeon-General were conferred on the administrative medical officers of the Royal Navy, in place of the cumbersome and antiquated designations of Inspector General and Deputy Inspector-General of Hospitals and Fleets.

One exchange took place during the year between the R A M C and the I M S.

The Indian Army List of January 1912 shows the strength of the Service as follows, as compared to 764 on 1st January 1911—

Bengal	162
Madras	59
Bombay	41
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Total	262
General List	116
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Grand Total	775

I—BENGAL

A—Deaths

No	Rank	Name	Date	REMARKS
1	Lt Colonel	J W T Leshe	27th March	Marseilles
2	Major	G Lamb	11th April	Edinburgh
3	do	C J Robertson Milne	22nd May	Barrhampur, enteric fever

B.—Retirements

1	S G	H Hamilton	7th April	Tour expired 16th June 1910 Selected list Selected list, extra pension Selected list, extra pension
2	Colonel	C H Beaton	27th March	
3	Lt Colonel	J F MacLaren	21th June	
4	do	J W Rodgers	5th July	
5	do	D G Crawford	5th December	
6	do	L J Pisan	10th June	
7	do	C N Bensley	12th November	
8	do	Sir C H Bedford	18th December	
9	Major	C Thomson	30th January	

C—Promotions

No	Old Rank	Name	New Rank	Date	REMARKS
1	Colonel	A M Crofts	Surgn Genl	7th April	Hamilton, R
2	Lt Colonel	D Grant	Colonel	1st January	Cunningham, D
3	do	H Hendley	do	7th April	Crofts, P

I BENGAL — (Contd)

D — Honours

No	Rank	Name	Honour	Date	REMARKS
1	S G	C P Lukis	G S Pension	1st Jany 1910	
2	do	C P Lukis	K C S I	12th December	
3	do	A S Reid	K C B	19th Jnne	
4	Colonel	G F A Harris	CSI	12th December	
5	do	T Granger	CB	19th June	
6	do	C J Bamber	M V O	12th December	
7	Lt Colonel	D Prain	LLD, St A	September	
8	do	C Macdaggart	C I E	12th December	
9	do	J R Roberts	C I E	12th "	
10	do	C H Bedford	Knight	12th "	
11	do	H Smith	K i H, 1st Class	1st January	
12	Major	L Rogers	C I E	12th December	
13	do	A Gwyther	K i H, 1st Class	12th "	

E — Deaths of Retired Officers

No	Rank	Name	Date	REMARKS
1	S G	W B Beatson	26th June	Eastbourne
2	D S G	J Jones	8th August	London
3	Colonel	W P Warburton	18th October	Lowestoft
4	B S	T E B Brown	28th June	Willesden, London
5	do	A D Campbell	8th October	Kensington
6	B S Lt Col	G Grant	2nd "	Bickley, Kent
7	Surgn Major	J Ince	23rd August	Swanley, Kent
8	do	A A Mantell	22nd "	Bathampton, Bath
9	Lt Colonel	K P Gupta	28th "	Calcutta
10	Captain	W W Webb	18th October	Exeter
11	Asst Surgn	E D Silver	26th January	Sutton, Kent

II MADRAS

*A — Deaths — Nil**B — Retirements*

No	Rank	Name	Date	REMARKS
1	S G	P H Benson	26th July	
2	Colonel	W A Quayle	30th April	
3	do	W O'Hara	7th June	
4	Lt Colonel	C M Thompson	1st April	Selected list, extra pension
5	do	J L Vangeysel	9th July	Selected list
6	do	M J Kelawala	16th April	Selected list

C — Promotions

No	Old Rank	Name	New Rank	Date	REMARKS
1	Bt Colonel	W B Bannerman	S G	26th July	v Benson, R
2	Lt Colonel	R B Roe	Colonel	30th April	v Quayle, R
3	do	J Smyth	do	7th June	v O'Hara, R
4	do	W B Bannerman	Bt Colonel	1st January	

D — Honours

No	Rank	Name	Honour	Date	REMARKS
1	S G	W B Bannerman	CSI	12th December	
2	Colonel	A M Branfoot	K C I F	12th "	Retired
3	Lt Colonel	E P Frenchman	C I E	12th "	Retired
4	Major	R Ross	K C B	19th June	Civil

II MADRAS —(Contd)

E —Deaths of Retired Officers

No	Rank	Name	Date	REMARKS
1	Surgn Major	G Marr	19th April	

III BOMBAY

*A —Deaths—Nil**B —Retirement*

No	Rank	Name	Date	REMARKS
1	Lt Colonel	H P Dimmock	15th April	Selected list, extra pension
2	do	A Milne	25th July	Selected list
3	do	W H Quecko	25th April	Selected list
4	do	E G R Whitecombe	27th October	

C —Promotions

No	Old Rank	Name	New Rank	Date	REMARKS
1	Lt Col	H F Cleveland	Bt Colonel	1st January	

D —Honours

No	Rank	Name	Honours	Date	REMARKS
1	Colonel	C F Willis	C B	19th June	
2	Lt Colonel	J Crummin	V D	24th March	
3	Major J	F W Irvine	K 1 H, 1st Class	1st January	

E —Deaths of Retired Officers

No	Rank	Name	Date	REMARKS
1	D S G	W P Partulgo	27th May	Beckenham, Kent
2	do	C K Colston	21st September	
3	B S Lt Col	Sir H Blanc	10th "	Paris
4	do	I B Lyon	27th April	London
5	Surgn Major	F R O'Kearney	3rd December	Satara
6	do	J Raby	22nd September	Paignton, Devon
7	do	D Simpson	2nd April	
8	Lt Colonel	A W F Street	30th January	Billerica, Essex

IV I M S

A —Deaths

No	Rank	Name	Date	REMARKS
1	Major	C Dyles	20th October	Ghazipur, septicaemia
2	Captain	A de C Charles	16th April	Mian Mir, appendicitis

B —Retirement

1	Lieutenant	H C G Semon	27th March	
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IV I M S —(Contd)

C—Honours

No	Rank	Name	Honours	Date	REMARKS
1	Major	F Elwes	C I E	12th December	
2	do	A E Walter	K 1 H, 1st Class	do	
3	do	W H Tucker	do	do	
4	Captain	J R Tyrrell	do	do	

V R A M C

A—Deaths

No	Rank	Name	Date	REMARKS
1	Lt Colonel	S Powell	23rd March	Rangoon, pneumonia
2	Major	A F Tyrrell	22nd "	Officers' hospital Millbank
3	Captain	W H Gillatt	9th "	Cairo, accidentally shot
4	Lieutenant	D E C Pottinger	2nd August	Cairo, Meningitis

B—Retirements

1	S G	Su T Galloway, R C M G	15th March	
2	Colonel	D Wardrop, C V O	11th February	
3	do	T F Macneeece	16th "	
4	do	A E J Cook	9th March	
5	do	A P O'Connor	5th April	
6	do	H W Murray	12th May	
7	do	F B Mielean	13th June	
8	do	A Peterkin	2nd October	
9	do	H J R Moberley	26th "	
10	do	R H Forman	2nd November	
11	Lt Colonel	J M Reid	29th January	
12	do	C W S Magrath	2nd February	
13	do	L W Swabey	3rd "	
14	do	J W B Buchanan	4th "	
15	do	S Townsend	8th "	
16	do	R E R Morse	18th "	
17	do	W J Baker	25th March	
18	do	W Dick	6th April	
19	do	J H A Rhodes	19th "	
20	do	R P Bond	19th May	
23	do	J Battersby	19th "	(1 H P, 2nd October, 1910)
21	do	W B Thomson	7th June	
22	do	J R Forrest	21st "	
24	do	H L E White	3rd July	
27	do	Sir J Fayrer	29th "	
28	do	T H F Clarkson	29th "	
29	do	D M Saunders	29th "	
30	do	H W Austin	29th "	
25	do	C W Brazier Creagh	2nd August	
26	do	D Hennessy	2nd "	
31	do	S R Wills	30th "	
32	do	T W O'H Hamilton	4th November	
33	do	J C Haslett	16th "	(1 H P, 20th January, 1908)
34	Surgn Lt Col	P H Whiston	28th January	Irish Guards
35	do	Sir W R Crooke Lawless	15th March	Coldstream Guards
36	Major	J W Jennings	31st January	
37	do	J H Rivers	23rd February	
38	do	A O B Wroughton	20th March	
39	do	W C Poole	3rd May	On 1 H P (1 P, 20th Sept, 1911)
40	do	R J D Hall	28th July	
41	do	C E G Stalkarth	28th "	
42	do	C J Heely	28th "	
43	do	T J Lenehan	28th "	
44	do	T J Wade Brown	29th "	
45	do	E M Williams	4th October	
46	do	G B Carter	8th November	
47	do	A Pearse	15th "	
48	Captain	W G Aviss	8th March	
49	do	F C Ford	8th April	
50	do	H F Irvies	10th June	
51	do	H H Kiddle	2nd September	On 1 H P
52	do	F H Noke	20th "	
53	do	H O M Beadnell	17th October	
54	Lieutenant	R C Galger	11th March	
55	do	A T O Wiggins	16th December	

V R A M C—(Contd)

C—Promotions

No	Old Rank	Name	New Rank	Date	REMARKS
1	Colonel	G W Robinson	Surgn Genl	15th March	v Gallwey, R
2	do	T M Corkor	do	11th December	v Trevor, seconded
3	do	W Babbie, V C	do	11th "	(Tempy S G 1910)
4	Lt Colonel	R I D Hackett	Colonel	11th February	v Wardrop, R
5	do	H H Johnston	do	16th "	v Macneecce, R
6	do	E J E Risk	do	9th March	v Cooley, R
7	do	W G Birrell	do	15th "	v Robinson, P
8	Brevet Col	F J Lambkin	do	5th April	v O'Conner, R
9	Lt Col	F J Jenekan	do	12th May	v Murray, R
10	do	F H Treherne	do	13th June	v Maclean, R
11	do	W H Horrocks	Brevet Col	20th May	
12	do	H J Barrat	Colonel	2nd October	v Peterkin, R
13	do	H O Trevor	do	26th "	v Moberley, R
14	do	A F Russell	do	2nd November	v Forman, R
15	do	W W Pike	do	9th "	v Bruce, seconded
16	do	J M Irwin	do	11th December	v Corker, P

D—Honours

No	Rank	Name	Honour	Date	REMARKS
1	Surgn Genl	W L Gabbins	K C B	19th June	
2	do	G W Robinson	C B	19th "	
3	do	F W Trevor	K C S I	12th December	
4	do	J G Macneecce	C B	19th June	
5	Colonel	R Jennings	K H S	1st April	v Marston, D
6	Lt Colonel	D Semple	Knight	1st January	(Retired)
7	do	H E R James	C B	19th June	(Retired), Civil
8	do	A R Alldridge	C S I	12th December	
9	Major	R J Blackham	K 1 H, 2nd Class	1st January	
10	do	F F Carroll	Osmanich, 4th Class	June	
11	Captain	E S Worthington	M V O	17th January	
12	do	R B Black	Osmanich, 4th Class	March	
13	Asst Surgn	Sir R Bredon	Rising Sun, Japan, 2nd Class	January	(Retired)

E—Deaths of Retired Officers

No	Rank	Name	Date	REMARKS
1	Surgn Genl	J A Marston	31st March	London
2	do	R W Meadows	9th November	Saltash, Cornwall
3	D S G	A G Elkington	31st May	(Guards), Farnborough, Hants
4	do	R W Clifton	16th August	London
5	Surgn Colonel	M Cogan	18th October	Eckington, Derby
6	Colonel	F Howard	2nd January	Bournemouth
7	do	J Macnamara	31st December	Erling
8	Brig Surgn	D Mackie	18th April	Aberdeen
9	do	A B Robinson	1st April	London
10	do	E R O'Brien	13th August	Southborne on Sea
11	Brigdr Surgn	T Tecrau	14th January	
12	B S Lt Col	D Renton	13th January	Edinburgh
13	Surgn Lt Col	H F Hensman	21st February	(1 Lftc Guards), Penkridge, Staffs
14	do	J S McCutcheon	18th April	London
15	Lt Colonel	J Hector	23rd March	Oxford
16	do	B C W Heather	12th April	
17	do	J O Seanlan	12th August	Broadclyst, Devon
18	do	H C Kirkpatrick	29th June	
19	Surgn Major	T T Gardner	18th February	East Grinstead
20	Major	G Bent	3rd March	Fleet, Hants
21	do	R C Thacker	24th September	Dublin
22	do	W W P Lewis	16th December	London
23	Surgeon	T Ligertwood, c v	10th May	Chelsea
24	do	G Wright	July	Lancaster
25	do	H R Dew	7th September	Stanton Wick, Somerset
26	do	K M O'Callaghan	14th December	Birkenhead
27	Captain	G S Nickerson	14th October	Senga, Soudan, fall from horse
28	do	J W Wells	October	

Service Notes

A Committee has been considering the whole question of field medical organisation and of the revision of the equipment. The creation of special units, *e.g.* clearing and stationary hospitals has long been required to bring our organisation up to date, and the present equipment, although an immense improvement on the old equipment, of ten years ago, is far too varied in character, and is at the same time lacking in essential details such as a sufficient supply of dressings.

The constitution of the Committee was as follows —

Surgeon General A. T. Sloggett, C.B., C.M.C.
Colonel S. C. B. Robinson, A.R.S.
Brevet Colonel A. S. Cobbe, V.C., D.S.O.
Major Jaybould, I.C.S.
Major W. St. C. Muscroft, S. & T. Corps.
Major E. Gunter Rame.
Lieutenant Colonel B. G. Seton, V.H.S., I.M.S. (Secretary)

We are glad to hear that the Royal College of Surgeons, England, have elected Lieutenant Colonel J. J. Pratt, I.M.S., to be a Honorary Fellow of the Royal College, an honour but rarely conferred. The last instance of such an honour being conferred on an I.M.S. officer was when Colonel Kenneth Macleod, I.M.S., received it.

We have been informed that the Council felt that in awarding it it was not only a reward for Colonel Pratt's fine professional work but that through him they were expressing their admiration for the splendid work always done in the Indian Medical Service.

LIEUTENANT COLONEL J. J. PRATT took the M.R.C.S., England, in 1881, and was educated at Westminster Hospital. At Netley he took the Herbert Prize and the Montefiore Medal in 1883-84. He served in the Zibb Valley Expedition of 1884, and has been for many years a Civil Surgeon of Lucknow and other stations in the United Provinces. He was a brilliant Surgeon and gave his name to Pratt's operation for hydrocele—by eversion of the sac, a method very largely used in India. Recently he was offered and refused the appointment of Inspector General of Civil Hospitals in the new Province of Bihar and Orissa.

In our last issue we briefly referred to the departure on furlough of Lieutenant Colonel H. W. Pilgrim, I.M.S., from Calcutta.

Lieutenant Colonel Pilgrim's name will for long be associated with the splendid Presidency European General Hospital in Calcutta. He was in military employ from his arrival in India in March 1887 till the 15th June 1890 when he entered the Bengal Civil Medical Department and was posted to the not very delectable station of Krishnagar in Nadia District. He remained at Nadia with various short changes till he was appointed 2nd Resident Surgeon at the Presidency General Hospital on 1st April 1892, and remained at that hospital for no less than 20 years, and in his recent departure on leave in April 1912. He was appointed Surgeon Superintendent in June 1898, and with intervals of furlough and privilege leave he has been in charge ever since.

All who know Calcutta will remember the old General Hospital built over a century ago by Revd. Z. Kleinander. It was in Lieutenant Colonel Pilgrim's time that this large hospital was entirely rebuilt. The Main Block was opened in September 1901, the new quarters for Nurses in 1901. The out blocks and quarters for Staff in 1902 and the handsome Woodburn Block for paying patients in June 1908.

In the preparation of schemes for these great changes Lieutenant Colonel Pilgrim took a very large share and his period as Surgeon Superintendent will always be remembered as the time in which there many and great improvements were inaugurated and successfully completed. He has handed over to his successor a hospital worthy of the premier city of India and one which must always be associated with his name.

MAJOR L. LIONEL EDMUND LONGWORTH PARKER, R.A.M.C., Sanitary Officer, 6th Poona Division, died at Poona, of Bright's disease on 25th March 1912. He was the eldest son of Colonel Walter Parker, R.A.M.C., retired, and was educated at St. George's, took the diplomas of M.R.C.S., and L.R.C.P. London, in 1897, also taking the public health diploma of the London Colleges later, in 1906 and passed into the I.M.S., in August 1898. While at Netley, at his own request and his father's he was transferred to the R.A.M.C.—the only case in which we remember a transfer of this kind being made. He was accordingly commissioned, not to the I.M.S. but to the R.A.M.C., as Lieutenant, on 28th January 1899, became Captain on

28th January 1902, and Major on 28th July 1910. He served throughout the South African War, from 1899 to 1902, being wounded during the campaign, and was present during the operations in the Orange Free State to July 1900, the actions at Lindley and Rhenoster River, in the Transvaal West of Pretoria from July to November 1900, in the Transvaal from November 1900 to November 1901, and in Cape Colony, and received the Queen's Medal with three clasps, and the King's Medal with two clasps.

THE following amendment dated 8th August 1911, to the Royal Warrant of the 13th March 1903 is herewith republished.

Whereas we deem it expedient to amend the rules for the promotion and precedence of Our Indian Medical Service.

Our Will and Pleasure is that Our Warrant of the 13th March 1903 be amended in accordance with the following provisions —

(1) The following shall be omitted from paragraph 10.

"An Officer below the rank of Colonel, who may be appointed as Our Honorary Physician and Surgeon after retirement from the Service shall be granted the honorary rank of Colonel."

(2) The following shall be substituted for paragraph 14.

"Six of the most meritorious Medical Officers of the Service on the Active List shall be named Our Honorary Physicians and six Our Honorary Surgeons. An officer shall relinquish the appointment of Honorary Physician or Honorary Surgeon on retirement."

Given at Our Court at St. James's this eighth day of August 1911, in the Second year of Our Reign.

WE referred to this useful change in our issue of November, 1911, p. 431.

THE King has approved of the following —

Majors being promoted Lieutenant Colonels, I.M.S.

With effect from 30th January 1912.

Bruce Gordon Seton, V.H.S.
Robert Henry Elliot, M.D., F.R.C.S.
Robert King Mitter, M.B.

Captains to be Majors

With effect from 27th January 1912.

George Browne, M.B.
Herbert Armstrong Williams, D.S.O., M.B.
William Christopher Long.

THE following Officers receive accelerated promotion —

From Captains to be Majors, I.M.S.

With effect from 28th December 1911.

James Drummond Graham, M.B.
Cuthbert Allan Spawson, M.D.
Maxwell Mackelvie, M.B., F.R.C.S.E.
William Henry Cazaly, M.B.
Walter Valentine Copping, M.D., F.R.C.S.I.
Leonard Joseph Montagu Ders, M.B., F.R.C.S.E.
William Mitchell Houston, M.B.
William David Acheson Keys, M.D.
Alexander Chalmers, M.B., F.R.C.S.I.
Samuel Robert Godkin, F.R.C.S.I.

(ARMY Department Notification No. 107, dated the 9th February 1912, so far as it relates to promotions of certain Captains of the Indian Medical Service to the rank of Major, is hereby cancelled.)

LIEUTENANT COLONEL ROBERT SHORE, of the Bengal Medical Service, retired on 31st December 1911. He was born on 10th November 1856, educated at the Queen's University in Ireland, where he took the degrees of M.A. 1877, and M.D. in 1881 and at Glasgow University, taking the diploma of L.F.P.S.G. also in 1881 and entered the Indian Medical Service as Surgeon on 29th September in 1883. He became Surgeon Major on 29th September 1895, Lieutenant Colonel on 29th September 1903, and reached the selected list on 2nd December 1909. Almost all his service had been spent under the Foreign Office, and for the last few years he had been Director of His Highness the Nizam's Medical Department, at Hyderabad. The Army List assigns him no War Service. He received the Kaisar-i-Hind Medal of the first class on 1st January 1906.

ANOTHER of the rapidly dwindling band of Medical Officers who served in both the Crimea and the Mutiny recently joined the majority. Surgeon Isaac Shortland Shillingford, late of the Army Medical Department, died at Peckham, South London, on 29th February 1912. In the

Crimean war he was present at the Alma, Inkerman, and Sebastopol, and in the mutiny he served through the Siege of Delhi.

SURGEON MAJOR JAMES JOSEPH HIFFERNAN, Madras Medical Service, retired, died in London on 26th February 1912. He was born on 25th December 1832, entered the I M S as Assistant Surgeon on 20th February 1856, became Surgeon on 20th February 1868, and Surgeon Major on 1st July 1873, and retired on 1st March 1880. The Army List assigns him no war service.

CAPTAIN ARTHUR FALCONER HAYDEN, of the Indian Medical Service, retired on 23rd January 1912. He was born on 24th August 1877, educated at St Mary's, took the L.R.C.P., London, and M.R.C.S. in 1900 and the M.B., B.S., London, with Honours in Materia Medica and Forensic Medicine in 1904, and entered the I M S as Lieutenant on 1st September 1905 becoming Captain three years later. He was attached to the Northern Command, and was serving in the second or Rawalpindi Division, when he had to take sick leave from 23rd January 1903, and, after two years, was placed on temporary half pay from 22nd January 1910. The Army List assigns him no war service.

CAPTAIN HAYDEN'S retirement leaves only two officers of the I M S on the half pay list. Captain Lawrence Randall, who entered on 26th July 1902, and went on half pay on 17th September 1906, and Captain R. F. C. Talbot, who became Lieutenant on 1st September 1902, and was placed on half pay from 24th July 1909. Of all other officers of the Indian Army, there are only six now on half pay, three Majors, one Captain, and two Lieutenants.

MAJOR J. H. HUGO, D.S.O., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd Class, is granted privilege leave for two months and eighteen days, combined with furlough for one year with effect from the 17th March 1912, under Articles 233 and 305 (b) of the Civil Service Regulations.

MAJOR S. HUNT, Indian Medical Service an Agency Surgeon of the 2nd Class, is posted as Agency Surgeon in Bundelkhand, with effect from the 17th March 1912.

The services of **Captain C. H. Fielding**, M.B., I.M.S., are placed temporarily at the disposal of the Government of Burma for employment in the Jail Department. Notification No. 122 Jails of 26th March 1912 is hereby cancelled.

CAPTAIN W. S. MCGILLIVRAY, I.M.S., medical officer, 41st Dogras, to officiate, in addition to his military duties, as cantonment magistrate of Cawnpore, *vice* Captain E. G. S. Trotter, granted leave.

MISS L. TRELBWY, L.R.C.P. & S. (Edin.), is appointed to act as First Physician, Pestani Hoimasi Cama Hospital for Women and Children, Bombay, during the absence on leave of Miss A. M. Benson, M.D., or pending further orders.

On termination of his duty as Special Health Officer, Delhi Coronation Darbar, the services of **Major E. L. Ward**, I.M.S., Superintendent, Central Jail, Lahore, are placed at the disposal of the Government of India, Home Department.

CAPTAIN F. P. CONNOR, I.M.S., on temporary plague duty at Gaya, is granted combined leave for eighteen months, *viz.*, privilege leave for two months and seven days, under Article 260 of the Civil Service Regulations, study leave for eight months and seven days, under Rules 2 and 6 of the study leave rules, and furlough for the remaining period, under Article 305 (b) of the Civil Service Regulations, with effect from the date on which he may avail himself of it.

The King has approved of the retirement of the following officers, I.M.S. —

Lieutenant Colonel Ernest Wickham Hore, M.B. Dated 7th December 1911.

Lieutenant Colonel Henry Thomson, M.D. Dated 1st February 1912.

Lieutenant Colonel Frank Cecil Clarkson Dated 1st March 1912.

Captain Arthur Falconer Hayden, M.B., F.R.C.S. Dated 23rd January 1912.

Indian Subordinate Medical Department

Senior Assistant Surgeon and Honorary Captain **James Johnstone** Dated 22nd November 1911.

CAPTAIN E. W. C. BRADFIELD, I.M.S., joined the Civil Medical Department, Madras, on 12th March 1912, and was posted as District Medical Officer, Tinnevely.

CAPTAIN F. C. FRASER, I.M.S., was granted eight months' leave up till 24th November 1912.

LIEUTENANT COLONEL C. F. FFARNSIDE, I.M.S., has been granted 6 months' combined and special leave up to 9th September 1912.

CAPTAIN T. W. MACONACHIE, I.M.S., has been posted to the charge of the Central Jail, Vizagapatnam.

CAPTAIN C. I. BRIERLEY, I.M.S., on return from leave was posted as Civil Surgeon, the Khyber.

CAPTAIN J. R. J. TARRELL, Indian Medical Service, an Officiating Agency Surgeon of the second class, is granted privilege leave for three months, combined with furlough for three months, and study leave for six months, with effect from the 5th April, 1912, under Articles 233 and 305 (b) of the Civil Service Regulations and the Regulations prescribed in the Notification by the Government of India in the Army Department, No. 31, dated the 13th January 1911.

CAPTAIN L. J. M. DEAS, Indian Medical Service, an Agency Surgeon of the second class, is posted, as Agency Surgeon, Bhopan, with effect from the 5th April 1912.

LIEUTENANT COLONEL P. J. LUMSDEN, Indian Medical Service (Bengal), an Agency Surgeon of the second class, is posted, on return from furlough as Residency Surgeon, Hyderabad, with effect from the 11th February 1912.

The Viceroy and Governor General has been pleased to make the following appointments on His Excellency's Personal Staff, with effect from the dates specified —

To be Honorary Surgeons

Lieutenant Colonel **A. E. Tate**, Royal Army Medical Corps, *vice* Lieutenant Colonel **B. Skinner**, M.V.O., Royal Army Medical Corps, retired. Dated 14th February 1912.

Lieutenant Colonel **E. G. Browne**, Royal Army Medical Corps, *vice* Surgeon General **A. T. Sloggett**, C.B., C.M.C. appointed Honorary Surgeon to His Majesty the King. Dated 1st March 1912.

LIEUTENANT COLONEL H. R. WOOLFE, M.B., Indian Medical Service (Bengal), an Agency Surgeon of the first class and Civil Surgeon, Ajmer, is granted privilege leave for two months and one day combined with furlough for one year and one month under Articles 233 and 305 (b) of the Civil Service Regulations, with effect from the 29th March 1912.

LIEUTENANT COLONEL W. H. B. ROBINSON, Indian Medical Service (Bengal), an Agency Surgeon of the first class, is posted as Civil Surgeon Ajmer, and Chief Medical Officer in Rajputana, with effect from the 29th March 1912.

The services of **Major E. L. Perry**, I.M.S., are replaced at the disposal of the Government of the Punjab.

The services of **Captain H. G. S. Wobb**, I.M.S., are placed temporarily at the disposal of the Government of the Punjab for employment in the Sanitary Department.

CAPTAIN R. A. NEEDHAM, M.B., I.M.S., is appointed to be Health Officer, Simla, *substantively pro tempore* with effect from the 26th July 1911.

The recent session of the London Tropical School of Medicine was the largest on record, the following I.M.S. officers, Major **H. R. Brown**, Major **D. C. Kemp**, Captain **J. C. S. Oxley**, Captain **P. M. Rennie** and Lieutenant **C. J. Stocker**, passed the examination.

MAJOR R H MADDOX, M A, I M S, is appointed to be Civil Surgeon of Gaya, with effect from the date of his taking over charge

MAJOR G KING, M B, I M S, is appointed to officiate as Civil Surgeon, Manbhum, with effect from the date on which he may take over charge

CAPTAIN J MASSON, M P, I M S, is appointed to be Civil Surgeon of Dibranga, with effect from the date of his taking over charge

THE services of Military Assistant Surgeon S J V Fox, Officiating Civil Surgeon, Manbhum, are placed at the disposal of the Government of Bengal

LIEUTENANT COLONEL S E PRALL, M B, B S (Lond), I M S, is allowed an extension by two days of the extraordinary leave granted to him in Government Notification No 5224, dated the 30th August 1911

CAPTAIN G F I HARKNESS, I M S, has been appointed to act as Civil Surgeon, Sukkur, with effect from the 1st March 1912, *vice* Major C R Bakhle, I M S, who has been deputed to attend the class in Clinical Bacteriology at Kasauli

HIS EXCELLENCY the Governor of Bombay in Council is pleased to appoint Major H Bennett, M B, C M, F R C S E, I M S, to act as Deputy Sanitary Commissioner for the Sind Registration District, in addition to his own duties, during the absence on leave of Major W O'S Murphy, M P, B Ch, D P H, I M S, or pending further orders

LIEUTENANT COLONEL D T LANE, I M S, made over charge of the duties of Superintendent of the Sialkot District Jail to Assistant Surgeon Bhai Dalip Singh on the afternoon of the 1st April 1912

LIEUTENANT COLONEL A W T BUIST, I M S, made over charge of the duties of Superintendent of the Ambala District Jail to Lieutenant Colonel D T Lane, I M S, on the afternoon of the 3rd April 1912

CAPTAIN J G SWAN, I M S, made over charge of the duties of Superintendent of the Ludhiana District Jail to Captain A K Luddie, I M S, on the afternoon of the 1st April 1912

CAPTAIN H HILYILAY, I M S, made over charge of the duties of Superintendent of the Lyallpur District Jail to Assistant Surgeon E Phillips on the afternoon of the 29th March 1912

MAJOR A W R COCHRANE, I M S, Superintendent of the Lunatic Asylum at Agra, was on study leave from the 11th December 1911 to the 6th March 1912

CAPTAIN C H BARBER, I M S, whose services have been temporarily placed at the disposal of this Government by the Government of India, Home Department, assumed charge as Officiating Civil Surgeon of Banda on the forenoon of the 13th April 1912

LIEUTENANT J ROBERTSON, I S M D, Civil Surgeon, Aotomal, C P, is deputed to undergo a course of instruction in Clinical Bacteriology and Technique at the Kasauli Institute

MAJOR T STODART, I M S, made over, and Captain E T Harris, I M S, assumed executive and medical charge of the Mogok District Jail on the afternoon of the 27th March 1912

CAPTAIN J F BOYD, I M S, has been appointed to be in charge of the Brigade Laboratory at Dera Ismail Khan, with effect from 1st April 1912

ON the termination of the course of instruction in Malariology at Amritsar, Captain T C Rutherford, I M S, Civil Surgeon, Bilaspur, is deputed to undergo a course of instruction in Clinical Bacteriology and Technique at the Kasauli Institute

CAPTAIN C H FIELDING, M A, I M S, whose services have been placed temporarily at the disposal of this Government for employment in the Jail Department was posted to duty at the Insam Central Jail

LIEUTENANT COLONEL C H L MEYER, M D, B S (Lond), I M S, has been granted furlough on medical certificate in India from the 22nd April to the 14th June 1912, both days inclusive

HIS EXCELLENCY the Governor of Bombay in Council is pleased to make the following appointments during the absence on leave of Lieutenant Colonel C H L Meyer, M D, B S (Lond), I M S, or pending further orders—

Lieutenant Colonel L F Childe, M D (Lond), I M S, to act as Principal, Grant Medical College, Bombay, in addition to his own duties

MAJOR E F G TUCKER, M B, B S, M R C P (Lond), I M S, to act as Second Physician, J J Hospital, and Professor of Pathology and Morbid Anatomy, and Curator of Pathological Museum, Grant Medical College, Bombay, in addition to his own duties

CAPTAIN C A GILL, I M S, is appointed Deputy Sanitary Commissioner, Punjab, *sub pro tempore*, with effect from the forenoon of the second January 1912, relieving Major H M Mackenzie, I M S, transferred. Punjab Government Notification No 191, dated the 20th February 1912, is hereby canceled

THE retirement of Lieutenant Colonel R Shore, M D, I M S, is dated from 25th December 1911

THE following Notifications appears in the *Gazette of India*, dated 27th April 1912—

Major W Selby, D S O, F R C S I M S, is appointed to be Principal and Professor of Surgery at King George's Medical College, Lucknow, with effect from the 15th August 1911

Major C A Sparrowson, M D, I M S, is appointed to be Professor of Physiology at King George's Medical College, Lucknow, with effect from the 22nd July 1911

THE services of Captain J H Burgess, M D, F R C S, I M S, are placed at the disposal of the Government of Bengal for employment as Surgeon to His Excellency the Governor of Bengal, with effect from the 1st April 1912

HIS EXCELLENCY the Viceroy and Governor General has been pleased to make the following appointment on His Excellency's personal staff, with effect from the 15th April 1912—Lieutenant Colonel J R Roberts, C I F, M B, F R C S, I M S, *vice* Lieutenant Colonel F O'Kienly, resigned, to be Surgeon

MAJOR J C ROBERTSON, M B, I M S, Officiating Sanitary Commissioner, United Provinces, is appointed to be Sanitary Commissioner with the Government of India, with effect from the date on which he assumes charge of the duties of that appointment

MAJORS R CHRISTOPHERS, M B, I M S, Assistant Director, Central Research Institute, Kasauli, is granted privilege leave for three months with furlough out of India for one year in continuation, with effect from the 1st May 1912

MAJOR J W WATSON, Indian Medical Service, an Agency Surgeon of the 2nd Class, is posted as Agency Surgeon in the Eastern States of Rajputana, with effect from the 1st April 1912

ON return from leave Captain A K Luddie, I M S, posted to Ludhiana as Civil Surgeon, relieving Captain J G G Swan, I M S

CAPTAIN R T WELLS, I M S, Plague Medical Officer, Jullundar, was granted six months' combined privilege and special leave (under Articles 269, 233 and 316 C S R), from 1st May

MAJOR W C H FORSTER, I M S, Professor of Pathology, Medical College, Lahore, assumed charge of the office of Deputy Sanitary Commissioner, Punjab, temporarily, in addition to his own duties on the afternoon of the 18th March 1912 relieving Captain C A Gill, I M S, proceeded on leave

MAJOR E V HUGO, I M S, Professor of Surgery, Medical College, Lahore, assumed charge of the office of Professor of Ophthalmic Surgery, in addition to his own duties, with effect from the afternoon of the 29th March 1912, relieving Major H Ainsworth, I M S, proceeded on leave

CAPTAIN A J V BETTS, M B, I M S, is granted from the 3rd May 1912, or subsequent date of relief, such privilege leave of absence as may be due to him on that date, in combination with furlough for such period as may bring the combined period of absence up to eighteen months

HIS EXCELLENCY the Governor of Bombay in Council is pleased to appoint Major L P Stephen, M B, Ch B (Abdn), D P H (Lond) D T M & H (Cantab) I M S, on relief, to do duty as Civil Surgeon, Nasik, vice Captain A J V Betts, M B (Lond), I M S, proceeding on leave

HIS EXCELLENCY the Governor of Bombay in Council is pleased to appoint Assistant Surgeon Varjivandas Damodardas Marchant, L M & S to act as Civil Surgeon, Dhulia, as a temporary measure, pending further orders

NOTIFICATION No 1902M, dated the 27th March 1912 (published at page 674 of the *Eastern Bengal and Assam Gazette*, Part I), replacing the services of Captain E J C McDonald, I M S, at the disposal of the Government of India in the Home Department, is cancelled

ON being relieved of his duties as Officiating Civil Surgeon, Sibsagar, Captain E J C McDonald, I M S, is appointed to be a Supernumerary Medical Officer in Assam and posted to Dibrugarh

NOTIFICATION No 1903M, dated the 27th March 1912 (published at page 674 of the *Eastern Bengal and Assam Gazette*, Part I), appointing Captain I F James, I M S, to officiate as Civil Surgeon, Goalpara, is cancelled

NOTIFICATION No 1904M, dated the 27th March 1912 (published at page 674 of the *Eastern Bengal and Assam Gazette*, Part I), transferring Captain W D Ritchie, I M S, from Dhubri to Sibsagar, is cancelled

NOTIFICATION No 1905M, dated the 27th March 1912 (published at page 674 of the *Eastern Bengal and Assam Gazette*, Part I), transferring Captain C A Godson, I M S from Sibsagar to Gauhati, is cancelled

CAPTAIN E J C McDONALD, I M S, Supernumerary Medical Officer, Dibrugarh, is appointed temporarily to hold charge of the Lakhimpur Military Police outpost at Rotung

MR F G CUTLER, Civil Surgeon, Bhandara, C P, was granted leave, and Civil Asst Surgeon W V Ramanna acted for him

CAPTAIN C L DUNN, I M S, Officiating Deputy Sanitary Commissioner, 2nd Circle, was deputed to Amritsar to attend the malaria class

THERAPEUTIC NOTICES

N C BAKER, Instrument maker, 244, High Holborn, London, W C, sends us a specimen of his simple *Silencer* for excluding noises from the auditory nerves of the ear, designed by Sir Ronald Ross, CB, FRS. Sir Ronald designed it over 20 years ago for a patient and has since frequently been used by himself when travelling or engaged in hard literary work

' This invention is a simple and inexpensive device for excluding or partly excluding, noises from being transmitted to the auditory nerves of the ear

It consists of a curved shaped metal spring, provided at the opposite ends with a button, and jointed in the centre for portability

The button presses against the tragus, or other part of the ears, so as to close them, and prevent, or partly prevent, noises reaching the tympanum. The distance between the opposite ends is rather less than the width between the ears, so that in use the two ends press lightly against the ears and hold them closed

When a device of this kind is worn, the noises going on in hospitals, factories, offices, railway trains, and steamers, the streets of a city, or from insects, etc. in tropical climates, can be wholly or largely excluded from the auditory nerves, and the wearer can obtain comparative or complete silence, and thus be enabled to get sleep or quiet or to concentrate his thoughts on work in hand without distraction. The springiness of the metal used will allow of the pressure being made greater or less as the wearer desires

This device can also be worn with advantage by those employed in big gun or rifle practice, etc., and is especially useful in the treatment of several nervous maladies, for which it was originally invented

It is certainly simple and effective, costs only 2s 6d

The PAMALA Co send us literature of a drug called by that name which is claimed to be superior of chronic malaria or malarial cachexia, and Dr C Leo of Rome writes strongly in its favour. We are not informed of the nature of the drug beyond that it is derived from "a plant of the genus umbelliferæ" and is sold made up in an elixir, and free from quinine and arsenic

The firm of Messrs Butto Kisto Pal & Co, Calcutta, will send free samples. We would be inclined to have more faith in it if the preparation were less of a secret one

Another snakebite 'remedy'—Miss Moorat of Lillooah, E I, sends us an account of a drug or 'remedy of an unknown nature' which she claims as an 'infallible snakebite remedy'. We know of no proof of the drug's infallibility or even usefulness beyond the fact that the lady states that she has saved cows and goats by its use

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITORS *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta

Annual Subscriptions to "*The Indian Medical Gazette*," Rs 12, including postage, in India Rs 14, including postage abroad

BOOKS, REPORTS, &c, RECEIVED —

Dr J Byrnes Physiology of the Somal Cerebral Canals
Public Health and Marine Reports, U S A, 1911

Paludism No 4

F Tweddell's A Mother's Guide (J M Pougherty, New York)

Agricultural Ledger, No 4, 1912

Santhal Mission Report

S K Engineers Tuberculosis in Bombay

Sir W Whitla's Dictionary of Treatment

G Thompson's Sleep and Digestion (J Bale & Sons & Danielsson Ltd)

Bahr's Dysentery in Fiji (London Schl of Trop Medicine)

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

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Original Articles.

SECOND CLINICAL REPORT ON THE TREATMENT OF LEPROSY BY THE USE OF A VACCINE PREPARED FROM CULTIVATIONS OF THE LEPROSY STREPTOTHRIX AND NOTES IN CONNECTION WITH FURTHER EXPERIMENTS *

BY E R ROST,

MAJOR, I.M.S.,

Rangoon

In the clinical report published in the *Indian Medical Gazette* of July 1911, twelve cases were reported on. The condition of these cases is at present as follows —

Case No 1 Maung Po Sharn — There now remain but slight signs of the disease in very slight thickenings in the ears and a few raised patches on the fingers. He had few injections during the year as he thought he was cured and went back to his village. His appearance now is that of a fat, strong, healthy Burman, his skin showing no signs of the original disease.

Case No 2 Ma Hman Tin — Original nodules on face have become flattened to level of the skin and slight discolouration only remains. Sensation has entirely returned.

Case No 3 Mr H — In good health. Has had no signs of the disease beyond the remaining scars, and has had very few occasional injections during the year. Discharged cured.

Case No 4 — The patches have now almost disappeared. Through menstrual troubles she was unable to take the treatment regularly.

Case No 5 Elizabeth — Treatment was discontinued the greater part of the year. Her condition has improved over that reported on 3rd January 1911. Slight nodulation of fingers and toes still remain.

Case No 6 Maung Duay — Was discharged "Cured" and is at school in good health.

Case No 7 — Has not been seen by me since the last report. But it is reported that he has greatly improved, the nodules on the face having disappeared. He continues the treatment.

Case No 8 — Reported "Cured" in last report and still in good health.

Case No 9 — Much improved since last report. Patches on face almost disappeared.

Case No 10 — Anæsthetic patches now normal but colour has not quite returned.

Case No 11 — Sensation returned. Patches almost natural colour.

Case No 12 — Cured. Has been seen by me on several occasions and has no signs of the disease.

SECOND SERIES OF CASES TREATED

Case No 13 S — Eurasian man. Duration of disease two years. Anæsthetic patches over arms and nodular patches on face. Has been under treatment for ten months. Sensation has returned around edges of patches and sensation slightly returned in central areas of patches. Nodules on face have become flattened and changed colour. Thickening of fingers gone and contractions of fingers disappeared.

Case No 14 Samuel — Eurasian lad. Duration of disease one year. Anæsthesia of hands and arms to above elbows, red patches on arms. Has been under treatment for four months. Sensation is returning in the hands and arms and the patches are less red.

Case No 15 Ma E Kye — Burmese girl. Duration of disease three years. Has a large tubercular patch on the right cheek which is anæsthetic and has anæsthesia of right arm and a large anæsthetic patch on the back. The swelling and colour of the cheek have gone down and the sensation in all the patches has returned towards the edges, the centre of the patches still being anæsthetic.

Case No 16 Maung Kwar — Aged 13. Duration of disease several years. A very bad nodular case of advanced type and patches with nodules all over the body. He has been under treatment one year, the nodules have been greatly flattened all over the body and the homize appearance reduced. His general health has improved.

Case No 17 Tin Sein — Duration of disease four years. Has been under treatment for one year. A bad nodular case, very large nodules all over body. Very much disfigured. No appreciable improvement.

Case No 18 Nga Tin — Aged 8. Duration of disease three years. Nodules all over body. Under treatment for eight months. Nodules have gradually decreased. Skin assuming normal colour. Sensation has returned on feet and arms.

Case No 19 Kan Tha — Aged 16. Duration unknown. An anæsthetic case with white anæsthetic patches all over the body. Has been under treatment for six months. No appreciable improvement.

Case No 20 Sister B — Arrived from the Malay Straits in a very bad condition, advanced tubercular type, nodules on face and hands with ulcerations of fingers, thick red raised patches all over the body. Has been under treatment during the year with very marked improvement. Photos show a complete change of countenance. The raised patches have become almost on a level with the skin, while the body patches are clearing up. The improvement set in rapidly lately. For several months no improvement was noticed.

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Case No 21 Ida—Eurasian girl Aged 10
Duration of disease five years Had been under the Nastin treatment for 18 months, after which time she was pronounced to be much worse

She has nodules on the face and hands and red raised patches of anæsthesia all over the body She has been under treatment for one year during which time her general health has greatly improved, the nodules have become flattened and the anæsthesia returned in places, while the discolouration has become greatly reduced

Case No 22 Stevens—Eurasian lad Aged 14 A mild anæsthetic case with an anæsthetic patch on the right leg After six months treatment the sensation has returned in the leg, the colour of the skin assuming normal

Commenting on these 22 cases, five of which have practically recovered and 15 have shown marked improvement, while the remaining two cases showed neither improvement nor increase, it will be seen that the improvement is very slow

The anæsthetic cases should be given much larger doses of vaccine than the tubercular ones, as much as 3 c c should be given to marked anæsthetic cases and to bad tubercular cases, the smaller doses of 5 c c are more beneficial These 22 cases have had no other treatment beyond the weekly injections of vaccine and have all been under observation at the Kemmendine Leper Asylum

But some private cases treated by me showed more rapid improvement by adopting the salt adjuvant, stopping the consumption of sugar and fish in the diet and causing erythema of the skin by very hot baths, irritating application or friction a few hours after the injection of the vaccine

Further Notes in connection with the Pathology of the disease

During the course of last year Kone Sem culture was found to alter its characteristics after successive culture and became sticky and more yellow like Williams' culture On obtaining a Kone Sem culture from Parel Laboratory, I found the characteristics the same At the time of submitting the former clinical report, I had been engaged for some months in experiments on cold-blooded animals, and have now carried out a large number of experiments in this connection

At first, a series of eight common mud fish found in the creeks in Lower Burma and used for making the *Ngapee* (preserved fish) which the Burmese people very largely use with their rice diet, were injected intra-peritoneally with Kone Sem culture After from two to four months these fish died and the following condition was found —

The peritoneal surface, omentum and surface of the liver were studded with small white granular

masses which, on microscopic examination, were found to contain acid-fast bacilli The scales and other organs of the fish were apparently normal On section these granules were found to consist of a wall composed of fibrous tissue and the centre contained fluid and masses of acid-fast bacteria

A second series of four fish injected from the contents of these granules all died after three months with pathological signs like the first series

The experiments were repeated with the same results, cultivation experiments on ordinary media failed, and it was found very difficult to keep out the overgrowth of the bacteria which apparently normally infest these fish

But lately I have obtained a surface growth in fish broth from the granules found in fish killed during the second month after inoculation with Kone Sem culture These cultures were grown at 50° F in the cold incubator They grow very slowly as a surface white scaly growth, somewhat like the Kone Sem culture in broth and inoculation from these cultures in the mud fish has produced the same infection of the peritoneum

Experiments carried out on frogs produced an analogous disease the frogs dying after two to three months

All the fish experimented on were kept for some weeks before inoculation, as these fish are liable to die off soon after being procured from injuries received One fish died after being fed on Kone Sem culture and nodules were found in the liver containing acid-fast bacteria

These experiments open up the question as to the possibility of this disease being related to or analogous to fish tubercle

Bruno Hoffer in his *Handbuch Der Fischkrankheit* mentions experiments in connection with the cultivation of fish tubercle, where it is undoubtedly shown to belong to the streptothrix group and that no definite relation has been shown between tubercle of warm-blooded animals and fish tubercle Although I have examined over 200 fish of this class obtained from different parts and have not yet found any pathological condition resembling that found after injection of the Kone Sem culture Yet it is highly probable that a condition such as I have produced experimentally exists naturally seeing that fish fed on lepra bacteria can develop a disease and that the disease known as fish tubercle may be a variety or closely allied to this disease because it is caused by an organism of the streptothrix group not very unlike the streptothrix which has been cultivated from cases of leprosy I do not, however, look upon the cause of leprosy in man as being connected with fish eating only that *I am of opinion that a diet of fish is likely to accelerate the*

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Rangoon



MAUNG PO SHAIN I
Condition on commencing treatment, March 1909



MAUNG PO SHAIN II
Condition in September 1909

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MAUNG PO SHAIN III
Condition in August 1910



MAUNG PO SHAIN IV
Present condition, April 1911



PRESENT CONDITION OF MAUNG PO SHAIN V
Please compare with photographs in "I M G"
for July 1911

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CASE No 20 SISTER B
Condition in August 1911



CASE No 20 SISTER B
Present condition

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REV FATHER B CASE No 7
Condition early in 1910



REV FATHER B CASE No 7
Present condition



CASE No 2 MA HEIN THEIN,
Condition in August 1910



CASE No 2 MA HEIN THEIN
Present condition

disease, but I believe that leprosy is contracted *through inoculation of the skin, repeatedly and at a large number of points of entrance*. Such a condition of the skin produced by *Ascaris Scabei*, *Lichen Tropicus*, Ringworm or other parasitic infection will give thousands of points of inoculation and where there is an interchange of clothing such as is so common amongst the great majority of persons of the class who do develop this disease, it is not unreasonable to believe that the connection occurs in this way. It is to my mind far more reasonable to suppose that the disease is contracted in this manner than that the bed-bug or other blood-sucking insect is the carrier. For, people in charge of Leprosy Asylums, nuns and non-leprosy workers in asylum precincts who live amongst the leprosy for a lifetime do not contract the disease. They are exposed to the bites of blood-sucking insects but do not wear clothes which have been worn by leprosy.

In the *Journal of Experimental Medicine* (Volume XIII, No 4, 1911) Maurice Comet M.D., has published experiments on the behaviour of bacillus leprosy in cold-blooded animals. The injections were given subcutaneously and bacilli injected found to increase, though no appreciable fatal disease was produced.

Again in the *Journal of Experimental Medicine* (Volume XIV, No 2, 1911) Charles W. Duval, M.D. and Fraser B. Guild, M.D., publish their experiments on injections of cultures of leprosy into guinea-pigs and the production by repeated inoculation of nodular masses in the spleen, liver and lungs.

These experiments are exceedingly interesting in showing that cold-blooded animals are more susceptible and that warm-blooded animals are susceptible by repeated inoculation, corroborating the view held in my first report (*Scientific Memoirs No 42 1911*). The disease produced in the monkey which developed clinical signs of leprosy did not run a progressive course. A second monkey developed slight nodular swellings of the nose and face but these subsequently subsided. The six other monkeys did not develop any signs of the disease and are still healthy.

SOME COMMENTS ON THE OUTBREAK OF RAT PLAGUE IN SUFFOLK AND THE MANCHURIAN EPIDEMIC OF HUMAN PLAGUE *

By W. C. HOSBACH M.D.,
Port Health Officer, Calcutta

ABOUT a year ago there appeared in the January number of '*Public Health*' an extremely

interesting article by Dr. Pringle on the outbreak of rat-plague in Suffolk interesting not only on account of the recorded facts with which it deals but still more so on account of the largeness and the gravity of the future possibilities. The gravity of the possibilities depends upon the fact that it seems to be established beyond doubt that epizootic plague has found a solid footing in the British Isles. Where that epizootic will end and what may be its ultimate developments no man can tell. On the one hand, previous experience of localised outbreaks in Britain such as those in Glasgow and Hull give good reasons for refusing to adopt a pessimistic outlook. On the other hand, the extent to which the outbreak has spread amongst rats and other animals, and the fact that the outbreak has been associated with pneumonic plague in man are events of sufficient gravity to necessitate that optimism must be a well informed optimism, based on a foundation of solid facts, and not on fascinating but fallacious theories. What follows in this paper is by no means new, in fact much of it has been published before as far back as 1900, November 24, when in a paper on the 'Diagnosis of Plague' I called attention to the great importance of the pneumonic form of plague and to the fact plague in general was essentially a septicæmia, though of course not every case is septicæmic. At that time the rat-flea theory had not been prominently brought forward, and there was no attempt to deal with it in my paper. Since that date, however, I have published numerous papers in which were recorded facts which were incompatible with the rat-flea theories, some of them the results of my own observation and experiments, some of them extracted from the reports of the Plague Commission. These papers were published for the most part in India, and in England have probably come under the notice of only the few who are specially interested in tropical diseases. The present position, however, renders it essential that every general practitioner at home should have clear ideas on plague, and some just notion of how far current theories as to its spread and causation are justified by the facts. There is no need here to reproduce that rat-flea theory or the conclusions of the Plague Commission, the most casual of general practitioners in England already knows them. From Dr. Pringle's paper on rat-plague in Suffolk, I gather that current opinions have altered very little from the time when the conclusions of the Plague Commission were summarised by the late Major Lamb, M.C. It may be remembered that subsequent to the publication of criticisms the authenticity of the epitome drawn up by Major Lamb, was denied by the Commission. Accordingly the criticisms now put forward refer to current opinion as voiced by Dr. Pringle in the summary of his paper, not to the conclusions of the

* Paper read at the Asiatic Society of Bengal (Medical Section)

Plague* Commission It may be noted, however, that Dr Pringle's paper was written with the aid of the "expert knowledge" and "invaluable advice" of Dr Martin and Rowland, two leading members of the Plague Commission.

CONTRASTED CONCLUSIONS

PRINGLE

HOSSACK

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| <p>(1) Plague is a rat disease.</p> <p>(2) It is conveyed from rat to rat and from rat to man by the rat flea.</p> <p>(3) The human flea is not involved to any extent in the matter.</p> <p>(4) Plague pneumonia is most infectious apart altogether from the question of fleas.</p> <p>(5) Bubonic Plague is not an infectious disease as commonly understood.</p> <p>(6) Plague pneumonia breeds true, i.e., give rise of other cases of plague pneumonia.</p> <p>(7) The bacillus pestis blood count is low in man, high in the rat.</p> <p>(8) This affords a ready explanation for the high degree of infectivity of the rat flea as compared with the human, etc.</p> <p>(9) Insanitary conditions play only a secondary part in the establishment of an epidemic condition. People who live under insanitary conditions are more liable to plague than those living under the reverse, but the insanitary conditions from the point of view of plague simply imply more close association with rats.</p> | <p>(1) True. It is also, however, a disease of man and can spread without the agency of rats.</p> <p>(2) It can only occasionally be conveyed from the rat to man by the rat flea as the rat flea only occasionally bites man. In Calcutta, special observations show that the part played by the rat flea can only be very small. In Manchuria the part of the flea was nil.</p> <p>(3) In the case of a severe epidemic in which septicaemia is a common occurrence any biting insect can probably convey plague.</p> <p>(4, 5 & 6) This separation of plague pneumonia from bubonic plague is largely artificial. In a severe outbreak the same group of cases may comprise pneumonias, septicaemias, and cases with buboes.</p> <p>There is a tendency for plague pneumonias to breed true but there are many recorded instances to the contrary. The Cashmere pneumonic epidemic started from a bubonic case.</p> <p>(7) The evidence on this point is insufficient and unconvincing. The experiments were not carried out on typical septicaemia in man.</p> <p>(8) However see Vorhies's successful experiments with human fleas. The evidence for the conclusion is insufficient and unconvincing. The experiments were not carried out on typical septicaemias.</p> <p>(9) Insanitary conditions play a very important part, though not a determining factor in the establishment of an epidemic condition. This important part may be completely dissociated with rats. It has been so dissociated in Manchuria.</p> |
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I will not ask you to reconsider the evidence that I have personally collected, but later I will ask you to consider the extraordinary confirmation of my conclusions by recent reports as to Manchurian Plague. The first report which I have to put before you is one obtained from the lay press. Dr Wu, chief of the Chinese Government's Medical Staff in the native city of Harbin and Fuchiansen states—"While the plague is practically pneumonic 30 per cent of the cases are secondarily

septicæmic and 7 per cent primarily septicæmic, but they are rarely enteric. I have obtained pure cultures of the bacilli of these types. Dr Mesory's case was purely septicæmic. Microscopical examination shows that the microbe has the usual cultural characteristics and apparently is the same as in other epidemics. The few rats examined were not infected, but fleas are not obtainable and consequently have not been examined. The virulence of the microbe is multiplied as it passes from victim to victim and there is considerable evidence that the disease is transmittable by the breath as well as by the sputum. Very intimate contact is unnecessary. Dr Shu-Shu-Ming probably was infected when speaking to a servant. No authentic case under my observation has recovered. Dr Shu-Shu-Ming was infected despite the use of Haffkine's lymph, as have been a number of Russians. Sanitary masking seems to be the most important precaution for the individual.*

Irresponsible commentators have suggested that the vehicle of infection is, in this epidemic, not the rat, but the tarbagan or marmot. The fact that the epidemic has raged through the depth of winter when Manchuria and Mongolia are ice bound and all marmots are busily engaged in hibernation puts the marmot theory absolutely out of the question. Marmots or marmot skins probably started the original focus but the epidemic in question was essentially an independent human disease spread by direct contact and by the ordinary modes of infection from man to man. It is practically, entirely independent of any epizootic, much less of the theoretical and uncertain result of the rubbing of infected flea feces into the punctures produced by voiding fleas. No fleas were found as it was in the depth of winter, and not a single infected rat was found in spite of the thousands examined.

Previous manspread epidemics—It must not be thought that, to one with any knowledge of plague, there is anything new and strange in the occurrence of a large human epidemic of plague in the absence, or comparative absence, of plague in rats.

The Cashmere epidemic—I have repeatedly referred to in previous papers. Professor Simpson has found in West African epidemics that infection was from man to man, pneumonia was common and rats played no part. In previous papers I have quoted repeated instances of rat epidemics with little if any human plague and *vice versa*, and in recent Indian publications I need only refer to the following papers in the *Indian Medical Gazette*. Thornton in January and February 1910 records a case to case epidemic in Cape Town in 1907 not associated with the death

* By Plague Commission is meant not the original "Indian Plague Commission" but the more recent "Advisory Committee" which has issued reports from time to time in the last five years.

of rats. There were 16 cases in all. It must be noted that, though the outbreak was pneumonic, the last 2 cases had buboes and recovered.

Walker in March 1910 records an outbreak in Meiktila, Burma, which occurred in the absence of rats and rat-fleas. All nine cases were bubonic. The factor of direct contact was an important one as it was present in 77 per cent of the cases. Bugs were abundant. Walker actually caused plague in a rat by bugs infected from one of the cases.

What I mainly wish to bring before you to-night are the facts recorded in the official report by Dr Gray of the British Legation, Peking, on the septicæmic and pneumonic outbreak in Manchuria and North China. He gives brief accounts of previous epidemics in Astrakhan, Turkestan, South China and Mongolia dating from 1896 onwards. The most striking feature in those outbreaks is the frequency of pneumonia, the total absence of plague in rats except in South China and clear indications that the disease is spread from man to man. In most of the epidemics subsequent to 1899 definite bacteriological confirmation was obtained that Yersin's bacillus was the cause of the disease. A few individual epidemics may be cited.

Kolobooka in Astrakhan 1899. A very infectious and fatal form of pneumonia. Full bacteriological confirmation.

Uralash Province 1899. Mostly pneumonic but later in the year both bubonic and pneumonic forms.

It should be noted that the Russian Commission came to the conclusion that rats and rodents have not played any part in the spread of plague in those regions, though the evidence is incomplete in parts.

Neuchuang in South China in 1899 had a very severe outbreak associated with the death of rats. The original case was bubonic, but during the epidemic which killed between 2 and 3 per cent of the population buboes were absent in many cases in which the lungs were affected.

Tongshan 1898. At the beginning bubonic cases greatly outnumbered the other varieties, but septicæmic and pneumonic cases were met with in increasing frequency. About 86 per cent were bubonic, 12 per cent pneumonic, and 3 per cent septicæmic, 1,000 cases. It is noted that infection was probably by infected fleas from Canton 10 days journey distant.

Mongolia So-lu-kou Valley 1896. All the cases were bubonic up to the middle of September and from now to November "tous avaient des crachats pneumoniques." 1898. Dr Matignon who recorded the previous epidemic noted many cases of infection from man to man, though the epidemic was mainly bubonic this year, as against pneumonic the year before.

In quoting Dr Gray's clinical description of the type of case in the 1911 Manchurian epidemic I must call attention to the extraordinary way in which it coincides with the description I had given as far back as 1900, particularly the phrase, "from the above symptoms it might perhaps be more correct to describe this epidemic as one of septicæmic plague and to look upon the lung symptoms as secondary."

"*Invasion*—No initial rigor, usually sudden onset. Headache often, there was bloated face and suffused conjunctivæ a sort of septicæmic cyanosis. Raised temperature (usually over 103° F) and fast fluttering pulse. Many are able to walk about until within a few hours of death, declaring that they feel quite well. Coarse crepitant rales are heard all over the chest with resonance only slightly impaired. The respiration average about 35 per minute. Usually blood-stained sputum is the first symptom in pneumonic cases and the differential diagnosis between these and septicæmic cases relies on the absence of bloody expectoration coupled with the fact of rapid death."

"The lung symptoms ranging from bronchitis to broncho-pneumonia are invariably associated with evidence of septicæmia. The later stages of the illness are marked usually by agonising dyspnoea. In many cases it is impossible to say whether a case is pneumonic or septicæmic till shortly before death when there may be a flow of blood from the mouth or nose for a few minutes. In purely septicæmic cases there is intestinal hæmorrhage in addition to the rapid course of the illness."

"From the above symptoms it might perhaps be more correct to describe this epidemic as one of septicæmic plague and to look upon the lung symptoms as secondary and due to injury of the vessels of the lung, the toxin causing a bloody œdema of the lungs. No glandular enlargements have been noted except in one case at Harbin in which there was a submaxillary bubo, followed by secondary plague pneumonia and death. At the same time in many cases in which the bacilli are found abundant in the blood films, there are no symptoms of lung involvement."

"Dr P. Hafkine working at Harbin, in eleven consecutive cases of blood examinations found *B. pestis* in seven microscopically and in all eleven culturally."

Can this society any longer unanimously maintain, as it did only two years ago, that my views were unfounded, that plague was not a septicæmic disease, spread by many means of infection, particularly pneumonic sputum, but a disease characterised almost invariably by buboes and spread by means of the rat-flea?

The Tarbagan as a factor in the Manchurian Outbreak. You may remember that one of the

rat-flea exclusivists, as they are now termed on the continent triumphantly telegraphed home that he had found fleas on the Tarbagan, as if he had successfully got over the difficulty of the complete absence of rat plague. He entirely neglected the fact that the Tarbagan is found in remote mountainous districts far removed from the great towns and that at the time when the epidemic was sweeping down the trade routes and devastating the frozen cities the Tarbagans were hibernating miles away. It is well known that the Tarbagan or marmot is liable to endemic plague and that outbreaks of human plague arise in consequence. There is no definite evidence, however, that this particular Manchurian epidemic had its origin in marmot disease. The third Resolution of the International Plague Conference in Manchuria runs as follows:— "There is no definite evidence to show that the first cases of this epidemic were caused by infection from sick Tarbagans. Nevertheless there is strong presumption for believing that Tarbagan disease is closely associated with pneumonic plague in Manchuria, Transbaikalia and North-East Mongolia and therefore with recent outbreaks."

Dr Gray gives at some length one of these outbreaks described by Barykin. It is very noteworthy that the hunters who skinned the animal escaped. The gun who was given the skinned carcass to remove, fell ill with bubo on the left groin and a pustule on one finger. Plague-like bacilli were recovered from bubo and pustule. Is it to be imagined that there were fleas on the skinned carcass and that one bit her on the finger? It has been shewn in the last section that plague in Manchuria, spreading direct from man to man as an acute epidemic of septicaemia, characterized by the frequent presence of pneumonia, is no new and epoch making phenomenon but one the parallel of which has been recorded frequently before. That it has not been more frequently recorded is due, I am convinced, simply to the almost universal obsession of the rat-flea theory. A man spread septicaemic disease is so incompatible with the current theory that here in India men have either doubted their own observations or at least have chosen the safer course of neglecting to report them. For if it be granted that plague not infrequently is an acute septicaemia, manifesting itself by pneumonia or by lung deposits, then the necessity of a special mechanism of infection such as the flea entirely disappears. In an acute septicaemia practically all the secretions and excretions of the body are infectious and may at times be almost pure cultures of the causative organism, with the result that the modes of possible infection are practically unlimited. There seems little doubt but that those responsible for the theories at present

current, have recognized the incompatibility of septicaemia and pneumonia or lung implication with the predominant part of the rat-flea. The consequence is that, consciously or unconsciously, they have denied the presence of plague septicaemia or pneumonia in man to an extent that is quite unjustified by facts.

There is an explanation for this attitude and it consists in the great variability that is found in different epidemics not only in man but also in rats, probably those responsible for the rat-flea theory and the accumulation of one-sided evidence were misled by the characteristics of the epidemics with which they happened first to observe. But this is an error that might well have been corrected by a wider survey of recorded facts and a less rigid dependence on purely personal observations.

The reason I have for so strongly and persistently combating the views of the rat-flea exclusivists is that no sound prophylaxis can be undertaken so long as measures are directed in main against the rat and his fleas. Prophylaxis must be founded on a much broader and more common-sense basis a basis that recognizes insanitation as a leading factor in the building up of fulminating epidemics, a basis that recognizes, what this Manchurian epidemic has at last brought into the broad light of day the importance of the human factor.*

AN ACCOUNT OF THE DISCOVERY OF A HITHERTO UNDESCRIBED INFECTIVE DISEASE OCCURRING AMONG THE POPULATION OF RANGOON

BY A WHIMORE,

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AND

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ABOUT 1½ years ago a few cases of human glanders infection were discovered in Rangoon, and the opportunity was taken for a much needed effort to lessen the incidence of this disease among the gharry ponies of the town. It was owing to our interest in this question of the occurrence of glanders in man that our eyes were opened to the fact that there was an infective

* For references please see *Indian Medical Gazette*, August 1909, p. 294, "Plague Pneumonia"—its bearing on recent controversies and existing preventive measures. Also a personal statement—W. C. Hossack, M.D., D.I.I.

More recent references in addition to those given in the text

(1) "Prevention of Plague in the Madras Presidency"—Colonel W. G. King, (I.F.S. retired) *The Journal of State Medicine*, January and March 1912 pp. 111, 173, etc.

(2) *Les Nouvelles Recherches sur la transmission de la peste bubonique par les puces* Revue critique par B. Gail Valerio, *Centralblatt für Bakteriologie, Parasitenkunde u. Infektionskrankheiten*, Bd. 1911, No. 22/23.

disease somewhat resembling but really easily distinguishable from glanders prevalent among the ill-nourished, neglected, wastrels of the town. In April, 1911, we had occasion to perform a *post mortem* upon the body of a Burman aged 40 years he had been admitted to hospital for fever of seven days' duration, and died after three days' stay in hospital. During these three days his temperature had been high, ranging from 103° to 104°F. His thighs bore numerous marks of morphia injections and in connection with these injections were several subcutaneous abscesses. At the *post mortem* examination the principal lesion discovered was a peculiar cheesy consolidation of the lungs. The distribution and appearance of this consolidation were those of neither ordinary lobar pneumonia nor tubercular infection, and upon examining smears from the diseased patches a large number of non-Gram-staining bacilli of the size and shape of *B. mallei*, apparently unaccompanied by other micro-organisms, were found to be present. As our minds were at that time intent upon the detection of glanders, it was not strange that we made a preliminary diagnosis of that infection in this case. We notified the M. O. H. of our suspicion, and he replied that a glanders infection would appear to be unlikely, as so far as he could trace the man, he had had no close contact with horses and had only quite recently been released from jail. In the meantime we had made cultures from the diseased lung. These cultures upon ordinary agar gave luxuriant growths. Upon examining these growths after three days' incubation we found that they consisted of pure cultures of what appeared to be non-motile bacilli of the size and shape of those we had found in the lung smears. We were rather puzzled by the rapidity and luxuriance of the growth, otherwise we were quite satisfied that the bacilli would turn out to be *B. mallei*, and it was without any misgivings as to the results that we passed on to carry out the cultural and inoculation tests for the differentiation of this bacillus. An inoculation of a potato slope gave after 24 hours a lightish yellow growth, which although rather rapid and luxuriant for *B. mallei* was otherwise not unlike the growth to be expected from an inoculation with this bacillus. Twenty minims of a 24 hours' broth culture were injected intraperitoneally into a male guinea-pig. The guinea-pig died within 36 hours, and to our disappointment no enlargement of the testicles was obvious. The *post mortem* examination disclosed no signs of very acute peritonitis, although a small amount of free fluid was present, the omentum was rolled up and along the rolled up matted omentum were deposits of acute inflammatory lymph, there was also acute perihepatitis, but the spleen appeared normal. Smears from the general peritoneal cavity showed a few bacilli in the matted omentum these were very numerous, in the liver smears there were a fair number, while in spleen smears only one or two could be seen.

From the omentum, liver and spleen pure growths of a very actively motile bacillus were obtained. We were under the impression that the bacillus obtained from the diseased lung was non-motile, and therefore we were at first of opinion that the bacillus isolated from the guinea-pig was not that which had been inoculated, but that during injection we had caused some injury to the intestinal tract and so set up a peritonitis with an infection from the animal's own intestinal canal. We would I think have abandoned this experiment as a failure had it not been that during the past few years we have seen much of the effects of an acutely fatal peritonitis the result of bowel injury. In considering the signs of peritonitis presented by the peritoneal cavity of this guinea-pig we felt dissatisfied with the simple view that they were due to a coli infection the result of bowel injury, and adopted an alternative view, namely, that the bacillus isolated from the human lung might lose its motility after a few days' cultivation upon artificial media and that we had been dealing from the first with a motile organism. This view proved to be correct, for upon examining the cultures from the guinea-pig a few days later it was found that their very active motility was now almost completely lost, and also that in young subcultures from our original lung cultures the bacilli were again actively motile. It now seemed possible that the bacilli which had caused the death of the guinea-pig and those which had been isolated from the diseased lung were of one and the same species, but if so it was plain that we were not dealing with *B. mallei* but with some other organism with which we were up to that time unacquainted, and that therefore if, as seemed very probable, the disease in the lung was the result of infection with this bacillus, it was a disease hitherto undescribed. The problem before us had changed entirely. Hitherto we had accepted the lung condition as that not unusual in glanders infection and had been engaged in the simple task of substantiating such hypothesis by bacteriological investigation upon well-known lines. Now, however, we had to abandon all guides and set to work to elucidate not only the distinctive characters of an unknown bacillus, but also the symptoms and lesions set up by its infection of the human subject and the incidence and method of such infection.

If our hypothesis were correct it seemed probable that previous cases of this infection would have occurred among the numerous *post mortem* examinations which we carry out here every year, and that the records, if they had been kept as carefully as we hoped, would afford us satisfactory evidence upon this point. We were not disappointed, for upon referring back we were able to find some four or five cases in which lesions in the lungs had been noted similar to those present in the case which we were then considering. In one of these cases we had

actually retained the case as almost certainly glanders, but upon bacteriological investigation we had failed to confirm the provisional diagnosis. Our bacteriological failure had been attributed to the fact that decomposition of the body was moderately far advanced, the motile bacillus isolated being classed as a *post mortem* contamination. In two cases, however, we had persevered with the bacteriological searches for some considerable time and had carefully noted our findings, so that by the help of this previous work we were at once able to approach any fresh case with a bacteriological knowledge fairly advanced. We had not long to wait before a second case presenting these curious lung lesions was met with in the mortuary. A Burman aged 30 years was admitted to hospital in a moribund condition with a history of fever of about a month's duration, and of dysentery during the last week he died after less than 24 hours' stay in hospital.

P M notes—An emaciated body with numerous marks of morphia injections.

Lungs—The left lung contained throughout both lobes numerous patches of the peculiar and characteristic consolidation, while in the right lung were a fair number of patches in the upper lobe with a few in the lower lobe.

The spleen was twice the normal size. The large bowel was extensively ulcerated, the ulcers being of the usual amœbic dysentery type.

Other organs normal.

Cultures from both lungs and spleen gave luxuriant growths in pure culture of the bacillus under investigation. Animal inoculations with the bacilli isolated from these two cases were again undertaken. Male guinea-pigs were inoculated both intraperitoneally and subcutaneously with young broth cultures and similar results were obtained with both strains of the bacillus. The guinea-pigs inoculated intraperitoneally died, or rather were moribund within 48 hours, in both there were enlargement and inflammation of the testicles due, as shown by *P M* examination, to an infection of the tunica vaginalis, the peritoneal cavities contained a very small amount of free fluid, in which a few bacilli were present, but there was no general purulent inflammation, though in each case the omentum was rolled up and matted by a white deposit of inflammatory lymph, acute perihepatitis was present, and the spleen was enlarged and presented small white points of inflammatory deposits, along the needle tract of inoculation was evidence of acute inflammation in the shape of a sort of caseous deposit with a hæmorrhagic surrounding, the lungs were normal. In the case of subcutaneous inoculations the tissues around the site of inoculations became widely infiltrated and inflamed within 18 hours, and the guinea-pigs were moribund upon the fifth day. Post mortem examinations showed that the most important changes were the extensive matting of the tissues around the sites of inoculations, the

matting being due to caseous inflammatory material, very little fluid pus being present. The spleens in both cases were enlarged and contained numerous very small white deposits. Pure cultures of the bacilli were obtained from all the diseased organs and tissues.

By the results of these animal inoculations and by cultural tests which will be shortly described, we were convinced that we had to deal with a species of bacillus which was not described in the ordinary books of reference, and with a disease of which no description had yet found its way into the text books of tropical or other medicine known to us. At first we thought that the disease was an infective disease in which the lesions were limited to the lungs, but the occurrence of the following case enlarged our field of view—

A dead body of a Hindu male, aged about 32 years, was picked up in the street and brought to hospital for *post mortem* examination. The body was poorly nourished, there was slight œdema of the feet, but there were no marks of morphia injections.

Lungs—No obvious disease present in either lung.

Spleen—Soft and friable and about $1\frac{1}{2}$ normal in size.

Liver—One or two very minute abscesses present, otherwise normal.

The case was signed up as death due to fever the result of some septic infection, and cultures from the spleen were made. These cultures gave a pure growth of the species of bacillus which we had isolated from the previous lung disease cases.

This case proved that the infection which we were investigating could occur apart from morphia injection, and that it was probably a septicæmic disease in which microscopic lesions occurred in various organs, possibly more frequently in the lungs than elsewhere. Subsequent investigations have fully confirmed this view.

The characters of the bacillus, by which it may be certainly and rapidly distinguished from all other pathogenic bacilli known to us, are as follows—

The bacillus is about the size and shape of *B mallei*. It stains readily with all the usual stains, but is not acid-fast, and does not retain the stain when stained by Gram's method.

Stained with Leishman's stain, it shows well-marked bipolar staining, the poles being stained purple and the body blue. This bipolar staining is clearly shewn by the bacilli present in smears taken from inflammatory lesions, and is particularly useful as a rapid preliminary test for the presence of the infection.

Growth upon all the usual culture media is rapid and luxuriant, and the bacillus is both aerobic and anaerobic, though more luxuriant under the former condition.

The cultural characteristics upon which we rely for a diagnosis are those upon ordinary nutrient agar, in broth, upon salted agar, upon gelatine, and upon glycerine agar. Upon ordinary agar, the growth appears in from 8 to 10 hours as moist, translucent, slightly raised colonies, in 48 hours these colonies have become opaque and of a dull creamy colour. In agar cultures of over a month's growth the colonies become dry, with the middle portion wrinkled, and the colour is brown with a tinge of pink.

In broth the growth is not very luxuriant for the first 24 hours, although it can be seen as a diffuse faint haze as early as the end of the tenth hour, after 24 hours there is a general turbidity of the broth and a pellicle begins to be formed at the surface. The pellicle gradually thickens until at the end of the fourth or fifth day it is a tough, resistant, wrinkled skin.

Upon salted agar the growth appears within 24 hours as a thin layer, rather like a thin coating of white paint, but the characteristic point about the growth upon this medium is, that if a smear preparation be made the bacilli are found to be growing in dense felted masses composed of very long filaments.

Upon glycerine agar the growth in its early stages is similar to that upon ordinary agar, but at the end of the second day the lowest third of the culture begins to acquire a wrinkled appearance, and at the end of a week the whole growth has become heaped up and rugose, rather like a growth of tubercle bacilli.

Upon gelatine at a temperature of 18° to 22° C, the growth is rather slow, but in such cultures the appearance is very characteristic. At the end of the third day there is visible growth along the whole track of the needle, while upon the surface it has spread out as a small white disc. By the fourth or fifth day liquefaction of the gelatine becomes apparent. This liquefaction occurs just beneath the white surface disc and forms here a small cup of liquefied gelatine, so that by the end of the first week or a little later the culture shows upon the top a cup of liquefied gelatine covered by a thick, wrinkled, pellicle, while along the rest of the stab is a white line of growth with extremely fine white dots distributed out into the surrounding clear gelatine.

Liquefaction has occurred in every case, but the actual rate of the liquefaction has varied considerably with the different strains of bacilli inoculated.

In young cultures upon all media the bacilli are actively motile, but this motility is almost entirely lost as the ages of the cultures advance. The motility is of a curious serpentine character.

The results of animal inoculation have been briefly mentioned already. Guinea-pigs have been the only animals used and inoculations have been made both intraperitoneally and subcutaneously. Both methods are useful for diagnostic purposes. In the former, we would call attention

to the occurrence of a well-marked Strauss's reaction in the male pig, but to obtain a good reaction it is important to use only small doses of the bacilli, $\frac{1}{2}$ to 2 minims of an eighteen hours' broth culture is quite large enough a dose, if larger doses are used the animal is apt to die before the testicular enlargement becomes conspicuous. With a subcutaneous inoculation the rapid local induration is the most important feature, this induration is due to a matting of the tissues with a thick caseous exudate, from which the bacilli can be readily isolated.

Feeding experiments have been carried out, and although for the purposes of diagnosis they are too protracted to be serviceable, yet they have proved of great value as a final proof that the bacillus isolated from the lung and other lesions was the cause of the illness.

Infection with this bacillus has been demonstrated in 38 cases during the past ten months. A full description of each of these 38 cases appears to us to be beyond the scope of a short paper such as this, but we would note that 30 of these 38 subjects bore marks of morphia injections (though in two these marks were few and old), 24 of the cases were either dead or moribund when brought to hospital, and in 12 there were serious dysenteric lesions in addition to this bacillary infection. The bacillus has been isolated from the lungs, spleen, kidneys, heart's blood, and nine after death, while in one case we isolated it from the peripheral blood during the patient's lifetime.

In the majority of cases the microscopic lesions, if present, are characteristic and readily recognised after an experience of one or two cases. In the lungs the typical lesion is a patch of consolidation of about the size of a hazelnut. The central part of the consolidation is pale and generally soft and cheesy,—although not so soft as tubercular caseation—while the outer zone hæmorrhagic, such patches are distributed irregularly throughout the lungs and appear to have no special predilection for any particular lobe or part of a lobe, upon the cut surface of an infected lung they stand out above the level of the surrounding normal lung, and they are usually rather dry, though in a few cases there have been very small areas where the infiltrated tissue has broken down and minute abscesses have been formed, in two cases this suppuration had gone on still further to the formation of quite large cavities, but cavity formation is apparently rare. The acute patches of consolidation may coalesce so as to form very large areas of consolidation extending over many square inches. In such cases the individual, small, acute areas are frequently marked out by their hæmorrhagic borders, but in other cases the whole of the extensive consolidation presents a uniform white cheesy appearance, it seems to us probable that these extensive areas of cheesy consolidation mean that the disease has run a somewhat chronic course, and we have provisionally classed them in our records as chronic cases,

and the other cases as acute. In favour of such a view is the fact that the bacilli are often scarce in the extensive cheesy areas, while in the small areas with well-marked hæmorrhagic zones the bacilli are extremely numerous. This lung consolidation in the "chronic" form could be possibly mistaken for consolidation due to tubercular infection, but with slight experience it is not difficult to distinguish in the vast majority of cases between the two infections. The areas of acute consolidation seem to us to agree very closely with the descriptions given of the lung lesions due to a glanders infection in man, and for such we at first mistook them.

Although the lungs are the most frequent sites of the lesions, yet microscopic lesions do occur in other organs. We have found lesions in the liver, spleen, and kidneys, and the bacillus was isolated once from a subcutaneous abscess.

The lesions in the liver and kidneys resemble in their broad features those occurring in the lung, that is to say, they consist of areas of a cheesy infiltration with a well-marked hæmorrhagic zone, and upon cutting the organ the diseased areas stand up a little above the surrounding normal surface. In one case both kidneys were practically destroyed by coalescing areas of this inflammatory infiltration, but as a rule the areas of disease in these organs have been small and isolated. In the spleen the usual lesions are very minute abscesses, pus formation apparently taking place in this organ more readily than in the liver or kidney.

Up to the present our knowledge of this disease has been drawn almost entirely from material obtained in the mortuary, and as the subjects have in most instances been brought to hospital either dead or moribund, our opportunities for investigation upon the clinical side have necessarily been scanty. The only case in which the disease has been observed throughout its course is one reported to us by Captain Knapp, I.M.S., Superintendent of the Rangoon Central Jail. Captain Knapp has most kindly allowed us to record it in this paper.

Patient, a Punjabi male, aged 35 years, was admitted to jail as a prisoner upon a three years' sentence in September, 1910, he was in good general health, not a morphia injector nor an opium habitué, and he was passed fit for full work.

Admissions to hospital since coming to the jail—

- (1) February, 1911, for a bad attack of acne vulgaris
- (2) Symptoms, suspicious of dysentery in February
- (3) For slight fever on the 16th of June

Nothing of note in the personal or family history.

Admitted to hospital for the final illness upon 28th of June, complaining of fever.

Condition upon admission—Temperature 101.2°, pulse 80, respirations 19, a few moist rales in the left chest, and pleuritic pain on the left side complained of.

June 29th—A single malarial parasite found in the blood.

July 2nd—Sputum examined but tubercle bacilli not found.

July 3rd—A swelling formed over the thyroid cartilage on the 8th this swelling was incised and a little pus found. Friction rubs were now audible over the bases of both lungs.

On the 10th a swelling, which was incised on the 11th, formed over the right clavicle. On the 18th a superficial abscess was found over the right trochanter and incised. On the 20th the patient began to be markedly dyspnoic, and dulness was detected at the base of the right lung. On the 22nd there were signs of consolidation at the left base. On the 30th a swelling appeared over the left malleolus incised on the 1st of August. The sputum was again examined, but neither pneumococci nor tubercle bacilli were found.

The patient died unconscious on the 7th of August.

Post mortem Examination—All the abscesses had been superficial. There was a small acute abscess in the left lobe of the liver close to the surface, and a film made from the pus of this abscess and stained with methylene blue showed a few bacilli.

With the exception of the lungs, the other organs of the body were healthy. Both lungs were the seat of an extensive but patchy consolidation of the white cheesy appearance so characteristic of this infection. The smaller patches were surrounded, as is usual, by hyperæmic zones. From the lungs the bacilli were readily isolated in pure cultures, and smears from the diseased patches showed bacilli present in large numbers.

The formation of the pyæmic abscesses made the resemblance to glanders exceedingly close, and as a matter of fact such diagnosis was suggested by Captain Knapp and negatived upon the ground that there seemed to be no possible source of such infection in the jail.

The nature of the bacilli isolated from this case were of course determined by full bacteriological and animal inoculation tests.

This case alone is quite sufficient to show that this infection can attack an apparently healthy and vigorous man, but the majority of our mortuary cases have been ill-nourished emaciated men, among whom morphia injectors have so preponderated that we have unavoidably come to associate the infection with such a habit. It is probable that this assumption has biased us to detriment of the clinical recognition of the infection in patients while they are still inhabitants of the hospital wards, it must be remembered that we derive our mortuary experience chiefly from the ill-nourished, neglected, wretches who have neither relatives nor friends to bear the cost of their burials, and therefore such experience is but ill-adapted to afford reliable evidence as to the incidence of any disease.

In three cases suspicion of the infection has been entertained during the lives of the patients. In two of these cases the disease was so far advanced that they died within a very few hours of their admission to hospital, and there was no time for bacteriological examination; in the third case, a Mohammedan man, aged 55, was admitted to hospital for cellulitis of the scrotum. This was treated in the ordinary way, but the patient did not improve, and when seen by Captain Crump, three days after admission to hospital, the man's high fever and rapid breathing suggested to this officer a general septic infection of some sort, and, as the man had numerous marks of morphia injections, he reported the case to us as being possibly a case of the infection which we were investigating. A specimen of the man's sputum

was obtained, but upon examination yielded no evidence of the infection. A specimen of peripheral blood was withdrawn from an elbow vein, this small operation was carried out in the middle of the night, and as the patient was very delirious and no assistance could be readily obtained, it was not surprising that the tubes were contaminated and that we failed to isolate the bacillus from plate cultures. However, a few minims of the citrated blood were inoculated beneath the skin of a guinea-pig, upon the third day after inoculation the pig was ill and there was considerable induration round the place of inoculation. In a smear from the caseous material from this indurated area bacilli of typical appearance were numerous and pure cultures of the bacillus were readily obtained. The patient died, and though it was not possible to have a complete *post mortem* examination, yet we were able to examine the lungs, the liver, and the spleen. The lungs proved to be free from disease, but both liver and spleen contained typical lesions from which the bacillus was grown in pure culture. Unfortunately no culture was taken from the inflamed scrotum, but there would seem to be no doubt, but that this case was a typical example of the infection, and it affords good proof that at any rate shortly before death, the infection is a septicæmic one, and can be diagnosed by a bacteriological examination of the blood during life.

The isolation upon 38 occasions of bacilli with constant and distinctive characters from pathological lesions, many of which were in themselves so peculiar in appearance as to suggest doubts as to their causation by any of the usual pathogenic bacteria, and the fact that in the majority of the lesions these particular organisms alone were present would be sufficient foundation for the hypothesis that we have been dealing with a particular and new infective disease. We think that it will be agreed that the first part of such hypothesis, namely, that we were dealing with a particular infective disease, is established by the fact that we have been able to produce a fatal illness in guinea-pigs by feeding them with pure cultures of the bacillus, and that this illness is characterised by lung lesions in every respect identical with those found so frequently in the human subject, however, we willingly grant that the second part of our hypothesis, namely, that this disease has not hitherto been described, may rest solely upon our ignorance of the scientific literature, an ignorance which it is extremely difficult to avoid under the conditions of pathological work at present not uncommon in the East.

To sum up —

Our experience during the year seems to us to warrant the following conclusions —

That there is prevalent in Rangoon a peculiar septicæmic or pyæmic disease caused by an infection with a bacillus whose characters are so distinct from other known pathogenic bacteria that it can be readily isolated and certainly identified.

That the disease so far as present evidence goes is peculiarly prevalent among chronic morphia injectors.

That our clinical knowledge is at present so meagre that only a bare suspicion of such infection can be excited by clinical signs, but that our bacteriological knowledge is sufficiently complete to allow such suspicion to be rapidly decided by the aid of the laboratory.

That in very many cases the macroscopic appearance of the lesions caused by the infection are sufficiently characteristic to permit a confident diagnosis to be made immediately in the mortuary without the aid of bacteriology, though of course such aid should be sought wherever facilities for laboratory work exist.

That the disease has certain resemblances both clinically and bacteriologically to glanders, but that the two infections can be readily differentiated if a proper bacteriological examination be carried out. Confusion would be due to a reliance upon the positive results of Strauss's test, as a positive result with this test is common to the two infections.

There are, we fear, very many most important points which we have failed to touch upon in this paper, such omissions are in part due to the necessary limitations of space, and in part due to our still very imperfect knowledge of the disease, a knowledge particularly scanty upon the clinical aspects of the infection, but we hope that we have succeeded in bringing forward sufficient facts to stimulate the curiosity of pathologists working in other places, and that by their work it may very speedily be made plain, whether or not this infection is of merely local or of much wider interest.

Before concluding we would like to be allowed to record our thanks to Captain Knapp, I.M.S., to whose professional zeal and clinical acumen we owe the only complete account of a case of the infection.

To Mr. Blake for providing us with specimens of true glanders.

To Dr. Marshall, Acting Health Officer, for his endeavours to trace the various cases reported to him.

And to Captain Cramp, I.M.S., for the careful look-out which he has kept for us upon the admission of possible cases of the infection to the hospital wards.

THE USE OF ULTRA VIOLET RAYS IN THE STERILIZATION OF WATER.

By W. W. CLEMESHA, M.D., D.P.H.,

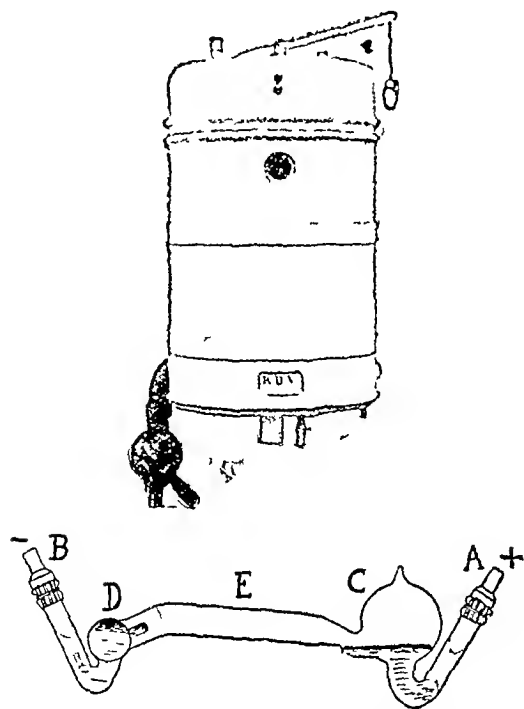
MAJOR, I.M.S.,

Sanitary Commissioner, Bengal

It is now almost a platitude to state that Ultra-violet Rays possess the power of killing bacteria suspended in water. The works of Downs and Blunt, Roux, Buchner, Richardson, Finsen and many others have shown that when these rays are

generated in sufficient quantity and brought close to a clean water the bacteria rapidly die. In this short paper we do not propose to discuss the physics of this subject, but rather to give a brief outline of the way in which the knowledge can be made use of for the benefit of the health of the community. It may be stated that at present there are at least two satisfactory sets of apparatus both made by the Westinghouse Co for sterilising water making use of the ultra-violet rays. These consist of (1) a small arrangement suitable for a single house or a small community, and (2) a much larger apparatus to be made use of in waterworks giving very much larger yield per hour. In both these apparatuses the ultra-violet rays are generated by the Cooper Hewitt Lamp. This is very much like an ordinary vacuum tube, only in this lamp when the current is running the interior is filled with the vapour of mercury. Hence it is also commonly known as the "mercury vapour lamp". The ultra-violet rays will not penetrate ordinary lead or flint glass. This medium apparently cuts them off entirely, hence glass cannot be used in the manufacture of this lamp. Fused silica and quartz is the material used. This makes the lamp expensive. The price of this lamp is £8. It should, however, be stated that if any one is so unfortunate as to break a lamp, on no consideration should he throw away the pieces as they are of considerable value. Furthermore, lamps that burn out and are not broken can be repaired.

Let us consider the domestic apparatus first. Drawings of both the lamp and the apparatus as a whole are given below —



The apparatus is really simplicity itself. All that is necessary is to bring a fairly fine film of

clean water close to the lamp without actually touching it. The little apparatus shown in the figure is divided into two pieces. It is made of enamelled iron. In the top half the lamp is suspended and the electric wires come through the metal. The lower half consists of a chamber with a funnel-shaped arrangement shown in the figure. The water comes in near the bottom and is caused to flow round and round the reversed funnel as it rises, till eventually it overtops the edge and runs out. It is rather difficult to estimate how long the water remains in this apparatus but with a slow stream it may be as many as 10 seconds. With a more rapid flow it is probably not longer than 4 or possibly 5 seconds.

It has been shown by the physicists that the nearer the lamp is to the water, the more penetrating and active are the rays so that it is the object of the designers to keep the lamp as near as possible to the surface. The apparatus should however, be firmly fixed because water should not be allowed to splash the lamp, or it will break.

Concerning the electrical part of the apparatus something must be said. A current can be taken from an ordinary lighting circuit such as is installed in Calcutta, Darjeeling and many other towns in India. The voltage of this is usually 220 and in most places it is a continuous current. If however an alternating current is supplied, a separate apparatus or transformer is necessary. This adds a considerably to the complication of the electrical outfit. Suppose we are dealing with an ordinary continuous of 220 volts all that is required is two single pole 10 amperes switches and fuse. From this the negative leads to lamp direct the positive going through a line resistance for regulating the potential at the lamp terminals, and from the line resistance to the positive terminals of the lamp. For convenience of control a single pole switch may be placed near the apparatus. As regards the wiring it is better to take this by a branch from the fuse board so as to ensure that the direction of the current is not reversed. If an ordinary wall plug is used it is necessary to test the direction of the current every time, and this, for an amateur, is most undesirable. The cost of the wiring and fitting of this little apparatus would not be more than 50 Rupees unless the lead was very long. The working of the thing is extremely easy. You turn on water which flows in as at A and you switch on the lamp and give it a tilt in order that the mercury may make the connection. The rays generated by the lamp sterilize the water.

An apparatus of this kind has been fitted up in my laboratory, and it has been subjected to very severe tests. Ten series of experiments have been carried out, all gave practically identical results with the exception of one or two

the reason for which will be given. In each case ordinary Calcutta filtered water was taken and a certain quantity of dilute sewage from the sewage laboratory was mixed with this, care being taken not to add any gross particles. A sample of this polluted water was then taken as a control. In every case faecal organisms numbered at least 1,000 to the c. c. and in some instances 10,000. The water (which it must be understood was perfectly clear in appearance though very highly polluted) was run through the apparatus at varying rates, samples being taken at different times, and whenever this was done the rate of flow through the apparatus was gauged. The samples were carefully examined as to the number of faecal organism and of ordinary water organism present in each. It should also be stated that in order to render the experiment free from objection a certain amount of ordinary polluted tank water, that has been exposed to the sun for weeks, was mixed with the water, because it is well known that the bacilli obtained from fresh faeces are usually much more delicate than those which are obtained from water after considerable exposure. So in order to add a fair percentage of what may be termed resistant specimens this tank water was added.

As regards the results it may be stated that in 7 out of 10 experiments an absolutely sterile water was obtained with a rate of flow of about 400 litres per hour. At a greater rate than this, say, 450 litres per hour there was an enormous reduction in the number of bacilli but absolute sterilisation was not obtained. Of course, with a rate of flow less than this, on every occasion—a matter of some 50 investigations—the water was found to be sterile, 400 litres is roughly speaking 70 gallons per hour.

It may be argued that this was unnecessarily severe test, and that an ordinary drinking-water with many fewer bacilli in it might have been used. It is possible that with a purer water a greater rate of flow may be admissible, but at the same time our idea was to test to the uttermost the capabilities of the apparatus and we find that with a highly contaminated water, such as the one used, a rate of flow of 400 litres per hour gave sterility whereas 450 did not. Again, if a current of higher potential had been used a better result would have been obtained, but the one selected was one that would be available and satisfactory in any house.

It will be observed that 3 experiments did not give a uniform result. It was found that even at slower rate occasionally faecal bacilli could be isolated from about a 100 c.c. of water. On further investigations it was discovered that a certain amount of water was left in the tank after each experiment and that some flocculent masses of growth had formed in the water. It was these masses which harboured bacilli and

protected them from the rays of the lamp, consequently they survive the sterilizing process. These accidents exemplify to a marked extent one important point, viz., that the water must be clear and free from suspended matter if a good result is to be obtained.

In the light of these experiments there can be no doubt whatever that up to 70 gallons per hour this little apparatus is capable of giving a sterile water from a highly polluted one provided there is no suspended matter present.

The cost of current used is less than 2½ annas per hour. The particular uses of this little apparatus would be for a hospital, school or even a mess in any place where electric current is available. The working is so simple that a native servant could be taught how to manipulate, though it would be advisable to keep it in the hands of an European. Of course, it presupposes that there is a good clean filter supply laid on to the house. It would be advisable when installing the apparatus to set the inflow tap in a fixed position giving the requisite steady flow, this being accomplished, no subsequent adjustment would be needed.

The advantages of the apparatus are considerable. It would be observed that no ordinary domestic filter yet designed could give anything like 70 gallons per hour of absolutely sterile water. 70 gallons of water could not be boiled probably for 2½ annas. No chemical is added to the water nor is the taste altered. Any one who has been accustomed to live on boiled water would be pleased to have a thoroughly sterile unboiled article rather than water sterilised by heat.

THE DIAMETER OF THE CORNEA, ESPECIALLY IN ITS BEARING ON CATARACT EXTRACTION

By H. F. LECHMERE TAYLOR, M.A. M.D., D.P.H.,
Mission Hospital, Jalalpur Jattan, Punjab

THERE is a remarkable absence of statement as to the dimensions of the cornea in the ordinary ophthalmic text-books. Fuchs contents himself with stating categorically that the vertical diameter is 11 mm and the horizontal 12 mm. Swanzy is silent on the subject, as are Herbert and Smith in their books on Cataract, and Maynard, Gumsdale and Brewerton, Meller, and Mayou in their writings on Ophthalmic Surgery generally. I can find no figures in Parsons' Pathology, nor in the text-books of Anatomy of Morris or Gray. The last named describes the cornea as "almost circular in shape, occasionally a little broader in the transverse than in the vertical diameter."

The question of the transverse diameter of the cornea is not without interest in the study of the various operations for the extraction of cataract, especially in the capsule. It has been discussed

by W D Greene in relation to Smith's operation in "*The Ophthalmoscope*" for April, 1911, and further, I believe, by the same writer in Wood's "*Ophthalmic Operations*." In the article referred to he states that he has examined 600 men of over 60 years of age in an American Soldiers' Home and found the average diameter "about 11½ mm." At Jullunder he says the average diameter was 12 mm whether this figure is the result of measurements made by himself during his visit, he does not say. He quotes Col. Maynard as having recorded the average diameter in 61 cataractous cases, as 12.05 mm. He regards a diameter of at least 11 mm. as desirable for easy delivery of the lens in its capsule, and a diameter of 9.5 mm as an absolute contra-indication.

With a view to testing these statements, I made measurements of the transverse diameter in a number of eyes operated on for cataract during the spring of this year. The series includes 165 cases, 120 in men and 45 in women, all adults of the usual cataractous age in North India, viz., 40 years and upwards. The results are given in millimetres, points between mm and halves of mm. being recorded as plus or minus the number of mm nearest.

In the 120 men the transverse diameter in the eye to be operated on was noted as follows:—

- +10 mm in 1 case
- 10.5 mm. in 12 cases,
- 11 mm in 4 cases
- 11 mm. in 57 cases.
- +11 mm. in 15 cases
- 11.5 mm in 12 cases.
- 12 mm in 5 cases
- 12 mm in 13 cases.
- +12 mm. in 1 case

In the 45 women it was noted as

- 10 mm in 4 cases
- 10.5 mm. in 9 cases.
- 11 mm in 3 cases
- 11 mm in 22 cases.
- +11 mm in 2 cases
- 11.5 mm in 3 cases.

If 11 mm be regarded as an average measurement, one giving ample room for a sufficient wound to allow the lens to escape easily in its capsule, it is interesting to note that amongst men more than five-sixths, and amongst women well over three-fifths, of the total number, are up to the desired standard. Only five individuals are found with a corneal diameter of less than 10.5 mm, a measurement which should give sufficiently easy egress for the great majority of unruptured lenses, if the knife be entered in the equatorial line. In none of those noted as 10.5 or less was expression in the capsule practised, however, so that I am unable to say from actual observation how such diameters affect the operation.

It was intended to make the series of measurements fuller, but pressure of work prevented the carrying out of the plan. The same cause cut short the observations of the dimensions of lenses delivered. I have only twenty-three measurements noted of lenses delivered in the capsule. Of these two are recorded as being only 7 and 8 mm respectively, 12 as 9 or 9.5 mm, 8 as 10 mm, and 1 as 10.5 mm. The last was a case of immature cataract of the diffuse greenish type (seclerosing). The corneal diameter is noted as +11 mm the operation and subsequent progress were uneventful, and the patient left hospital on the 10th day with a key-hole coloboma, and able to count fingers well at 45 ft with a 10 D lens. This result, I may say in passing, is better than that usually obtained (in my hands) with the intra-capsular operation in such cases.

The measurements were taken with a sharp-pointed steel compass with a strong spring controlled by a fine screw, the readings being taken off a steel measure. The endeavour was made in each case to hit off the exact edge of the clear cornea. This is not always easy, and the presence of an *arcus senilis* in many cases made it still more difficult. The general impression left on one's mind is that the number of cases in which the intra-capsular operation is contra-indicated by the defective size of the cornea must be very small.

The figures cannot, of course, claim scientific accuracy, but as a working guide are probably sufficiently near the truth. It is hardly possible for those in charge of busy general hospitals, with inadequate staffing, to deal competently with the vast masses of clinical material launched upon them, especially when, as in the Punjab, "seasons" play a large part in the arrangement of work. This note may stimulate some one who has to deal with "just that moderate amount of material which is so conducive to scientific clinical study" to go fully into the question of corneal and lens measurements in their relation to operative procedure.

SOME NOTES ON AN OUTBREAK OF EPIDEMIC JAUNDICE

By L. H. V. HODGE, M.B., B.C., Cantab.,
1915.

On the 1st of July, a Sepoy of the 26th Punjab, at that time stationed on the Samana, N-W F P, was admitted to hospital suffering from what appeared to be an attack of simple catarrhal jaundice. One case followed in August and another in September. These proved to be the precursors of an epidemic of thirty-four cases.

The symptoms were those of catarrhal jaundice, varying in degree, usually mild, and never of

such severity as to cause anxiety. A number of the cases were so slight that the subjects did not consider it necessary to report sick, but were discovered in the course of a medical inspection.

The duration of the disease, judging from the period after which the stools resumed their normal colour, was short, usually about a week, although there were exceptions to this. Jaundice naturally persisted longer. The average length of stay in hospital was sixteen days.

Age—The youngest man attacked was 17 and the oldest 40. There are band boys in the regiment ranging in age from ten upwards, who were also exposed to infection, but none of whom contracted the disease.

Caste—All classes were infected, including dhoolie bearers. The Sikh companies suffered most, shewing a percentage of 69% on the total. This preponderance, however, is more apparent than real, as four out of the eight companies are composed of Sikhs.

General symptoms—The appetite was impaired, otherwise the majority of patients were not seriously affected. Vomiting was not common, although a few patients suffered in this way in the early stages of the disease.

Mental depression was a feature frequently noted.

Pain—24% of the cases complained of pain in the region of the liver, 16% in the epigastric region, and 4% in the front of the chest.

SYMPTOMS OF OBSTRUCTION

Jaundice—All cases shewed deep discolouration of the mucous membranes and sclerotic. Yellow colouring of the skin was not obvious except in the case of the more fair-skinned of the patients.

With the exception of one case, the stools of all subjects were clay coloured, and, in the majority of cases, bile was found in the urine.

The liver was found enlarged in 36 per cent of all cases. In one case, to which reference will be made later, the gall-bladder was enlarged and could be felt three fingers' breadth below the costal margin. The enlarged liver was not markedly tender, and a point hardly to be expected, the enlargement persisted after the symptoms had subsided.

Other Symptoms and Signs

The spleen was found enlarged in several instances, but was quite hard, and appeared to be due to former attacks of malaria rather than to the present condition.

The pulse rate was markedly slowed, the lowest recorded was 36 per minute, other symptoms were noted in three cases, indicating a more grave influence on the heart's action. In these cases marked irregularity was noted, one patient

in particular manifesting a remarkable arrhythmia, which is described in detail lower.

As has been stated above, the majority of cases were mild, but two cases were in hospital for six weeks before they could be said to be cured.

The first case a man of 40 who looked considerably more than his age, proved resistant to the routine treatment. The liver was enlarged with the gall-bladder reaching to a distance of three fingers' breadth below the costal margin. He complained of discomfort in the region of the gall-bladder, but not of violent pain or colic. The distension proved so persistent that one was led to fear that there might be some cause for obstruction other than catarrh, however, on full doses of ipecacuanha, the obstruction broke down and the liver and gall-bladder subsided. Throughout the attack there was no fever.

The second case recovered quickly from the jaundice, but the normal action of the heart was disturbed. The patient complained of discomfort over the heart on the least exertion. The condition was at first a simple irregularity, but finally settled down as a regular but abnormal rhythm. The heart-beat was timed in groups of three, the beats of the group becoming progressively shorter both in systole and diastole and the groups separated by a prolonged diastolic interval.

After three weeks in bed with no improvement, the heart resumed its normal action in a few days under small doses of digitalis and about a month later the patient was able to compete successfully in a three-mile race.

A third case shewed a rather unusual onset. The patient was admitted for severe gastric pain and vomiting. He could take no solid food and vomited after the ingestion of even small quantities of milk. The pain and vomiting persisted for several days and then passed off; with the subsidence of these symptoms a fleeting jaundice appeared lasting five days and ending in a mild attack of dysentery.

Treatment was carried out on lines as for catarrhal jaundice. Pil hydraig was administered on admission and repeated every three or four days with most satisfactory effects in relieving the local discomfort. The following mixture was given three daily—

Acid Nitro hydrochloric dil.	min 10
Ammonium Chloride	grs. 10
Magnesium Sulphate	grs. 20
Infusion Chiretta	ad oz 1

All cases, with the exception noted above, responded quickly to this treatment.

The cause of the outbreak is obscure. In a disease of undetermined origin one is perhaps justified in marshalling all known circumstances which may affect the health of the community attacked, in order that among them one may

discover some factor common to all cases, which may be regarded as a cause, immediate or predisposing, for the disease

Two explanations present themselves, the first, that the disorder may be due to external influences, climatic or dietetic, the second, that it is of bacterial origin

Diseases of organs closely connected with the digestive tract suggest some error of diet, on the other hand, the influence of climate on the functions on the liver is an established fact

With regard to climate, the cases occurred under circumstances so widely divergent as to exclude such influences as determining factors in the epidemic. The first case occurred in July at the height of the hot weather, cases continued to appear up to the time when the regiment left the Samana in January. From the end of October, the thermometer fell to below freezing point nightly, in one instance dropping as low as 24° F, one case occurred at Karachi and two at Singapore, where the weather was again extremely hot

Diet—It may not be out of place to give a summary of the chief articles employed by the different classes —

- 1 Dal, spices, chillies, pepper, onions, garlic, vetches and ghee
- 2 Vegetables. Various, mixed with spices
- 3 Kunka. Ghee, starch or flour, sugar and almonds, nuts.
- 4 Kheer. Milk, rice and almonds, cooked together
- 5 Khichri. Rice, vetch, salt and water, no spices.
6. Meat. Commonly goat's meat, spiced or unspiced.
- 7 Pulao Sweet. Rice, ghee, sugar, pepper, almonds and nuts, well cooked
- 8 Yellow Pulao. Rice, ghee, saffron, peppers, cardamoms and zira
- 9 Pulao Meat. Meat cooked with rice and good spices
10. Tea and Milk, the latter in large quantities, the tea contains cardamoms
- 11 Chupatties
- 12 Alcohol in fairly generous quantities, chiefly rum

Punjab Mussalmans—These men eat nearly all things mentioned above, but more meat, onions and spices, and less milk than the Sikhs. No alcohol.

Afridis—Much as above, but are particularly addicted to curds and sweetmeats. No alcohol

There was no change in the men's diets on the Samana, fresh vegetables were supplied regularly though in rather small quantities. No definite symptoms of scurvy were seen though several men suffered from anæmia without apparent cause.

In the above list there is one essential difference in the diets, that is, the Sikhs take alcohol. This as a predisposing cause may account for the preponderance of cases among that class, although this preponderance is not so great as appears, as half the regiment consists of Sikhs

At the time of the outbreak, the regiment was divided among three posts, Fort Lockhart, Hangu, and Thall, the first case occurred in F Company at Fort Lockhart, shortly afterwards, this company moved to Thall. The second and third cases appeared at Thall nearly two months after the first, no more cases were seen at Fort Lockhart for three months

The dates of appearance at the respective posts was as follows —

Fort Lockhart	Thall	Hangu
17-11		"
	26 8-11	"
	30 9-11	"
A 6 10-11		"
B 8 10-11		"
C 14 10-11		"
D 17-10-11		E 23 10-11
		F 25-10-11
28 10-11		2 11-11
		11 11-11
		16 11-11
20 11-11		20 11-11 two cases
		21 11-11
		25 11-11
		1 12-11
	7-12-11 two cases	7 12-11 two cases
	12 12-11	
	"	13 12-11
31 12-11	"	17 12-11
"	"	10 1-12 two cases.
"	"	11-1-12
	"	19 1-12
Karachi	...	26 1-12
Singapore on the voyage to China		5 2-12
		6 2-12

The first thing that strikes one, on studying these dates is the long interval between the first few cases. One obvious explanation is, that several men suffered in so slight a degree as to consider it unnecessary to report sick. That such was the case was proved later on making a medical inspection of the regiment, when it was discovered that men were actually performing their ordinary duties while suffering from active jaundice

The reason for the first migration of the disease to Thall is clear, the Company moved down and took it with them. Unfortunately no such explanation is forthcoming as to how it reappeared at Fort Lockhart. The second case at Fort Lockhart occurred on October 3rd, the Companies did not exchange till the 20th. However, separation of the posts was not absolutely rigid, and several men had been transferred independently of the Companies. The appearance of the

disease at Hangu was coincident with the removal of Head-quarters, that is to say, the infected companies to that post.

These facts are suggestive, the disease closely following the company, one is driven to the conclusion that the men and not the place were infected.

Relation to Malaria

Careful inquiries with regard to previous history of malaria in the patients attacked were made, as it appeared that these cases might be attributable to this cause the more particularly as malaria was prevalent at the time of commencement of this epidemic. As far as could be ascertained, 24 per cent of those attacked had never suffered from fever. This sounds somewhat unlikely for men who had lived all their lives in the Punjab and Tirah, but at the same time it goes to show that they had not recently had fever. 36 per cent had a history of fever within three months, of which less than a quarter had been attacked within a week of the present disease. The remainder had not suffered from any kind of fever within three months. These figures certainly do not suggest that the epidemic had any malarial foundation.

Under circumstances so definitely pointing to infection from man to man, one would expect to find the intervals between the cases to a certain extent regular. On turning once more to the table of dates, we shall find, if we disregard the first few cases, that there is certain regularity of appearance. Thus, taking *A* and *B* to be infections from the same source, from *A* to *C* is 8 days, from *B* to *D* is 9 days. *D* to *E* and *F* 6 and 8 days respectively. Similarly, throughout the epidemic, the cases appeared at such intervals as to warrant the assumption that the period of incubation is somewhere between 6 and 9 days. There are, of course, gaps and discrepancies but no epidemic works out its course on rigid mathematical lines.

With regard to the degree of infectivity, it is unwise to make dogmatic statements on the experience of one small epidemic, but one point seems clear that when the jaundice is established, the infectivity is little or nil. The justification of this statement lies in the fact that, although the cases were treated in a general ward, not one of them fellow-patients returned to hospital for jaundice.

Unfortunately the means of reference at my disposal are somewhat scanty, and while there are doubtless many descriptions of epidemics of this type I am able to quote from one source only. In the *British Medical Journal* of May 30th, 1896 Dr Plowright describes an epidemic of 34 cases at King's Lynn. Though not described in fullest detail the duration of the disease its mildness and absence of mortality suggests that the

disease in this and in the epidemic under discussion is identical. In this paper three previous epidemics are mentioned. Dr Plowright suggests on climatic grounds that the disease is water-borne, contrary to experiences of the present epidemic.

The features of this disease did not harmonise with the description in Osler's Text-book of Medicine, in which pyrexia is mentioned as an essential feature of epidemic jaundice.

A Mirror of Hospital Practice.

EARLY TUBERCULOSIS

By H. S. MATSON, M.B., B.S.,

CAPT., I.M.S.,

Civil Surgeon, S. Shan States

In the *Lancet* of February 24, 1912, appears short resume of paper entitled "The Treatment of Latent or Marked Tuberculosis," in which certain symptoms attributable to the hypersensitiveness of the organism to its own toxin are detailed.

The majority of these symptoms are not those ordinarily associated with tuberculosis, but that many of them are characteristic of the very early stage of invasion is undoubted.

Careful physical examination of the lungs in such cases reveals very little that is characteristic, and in most cases there is at this stage no cough which will furnish sputum for a bacteriological examination. Further the symptoms complained of are so obscure as to frequently suggest neurosis, neurasthemia, anæmia or perhaps chronic malaria rather than tuberculosis.

They are mostly referable to the vaso-motor system, and are evidence of poisoning by small doses of tuberculin before any degree of immunity is attained, and can be accentuated at any time by the injection of a full dose of human tuberculin.

The symptoms may be classified under certain headings—

Nervous system, headache, disturbed sleep, sensation of great fatigue, and especially marked feeling of illness in the morning. Neuralgic pains about body. *Digestive*, loss of appetite, amounting sometimes to nausea, and in one case persistent diarrhoea, anæmia, amenorrhœa. *Cardiac*, persistently rapid pulse, fainting, flushing and sensations of heat about the body.

Particularly characteristics are the headache and feeling of illness in the morning, the persistently fast pulse rate, the broken and disturbed sleep.

Further examination will frequently reveal nothing else abnormal till the temperature is taken rectally four hourly for some days, and the

further development of the case is watched. Sooner or later physical signs at one or other apex can be detected, and in case of doubt as to their nature, injection of a dose of tuberculin will intensify the slight rates or diminution of breath sounds in a manner which will leave no room for uncertainty.

There are at present under treatment here four cases of early or latent tuberculosis, all of whom illustrate this hypersensitiveness to tuberculin, all are in the early stage, none of whom further showed at first any of the classical signs of pulmonary tuberculosis. Such cases as these being in the curable stage illustrate the importance of the recognition of this group of symptoms, as pointing to the real nature of the underlying lesion. Their value lies in this, that occurring together in a patient obscurely ill, they arouse suspicion which leads to further examination, and put one on the right track at a time when treatment is likely to be of most value and irreparable damage has not been done to the lungs.

A patient attends hospital perhaps with a history of obscure illness with symptoms such as those detailed above. Suspicion is aroused, and though physical examination of the lungs reveals nothing, the rectal temperature taken four hourly shows a characteristic febrile state, and a dose of tuberculin (human) under the skin will cause such an accentuation of all the symptoms as to leave no further room for doubt. Several of these cases in spite of treatment have developed physical signs in the lungs and bacilli have been found in the sputum.

Case No I—Shows very well the group of symptoms attributable to hypersensitiveness to tuberculin. She had been ill for over a year and evidently possessed a considerable degree of natural immunity. Practically none of the ordinary signs of pulmonary tuberculosis were present at the outset, and the skin temperature showed no variation, it was not till we came to take the rectal temperature four hourly that the nature of the case was recognised.

The broken sleep, restless nights, with the feeling of intense illness in the morning, hot flushes during the day, neuralgic pains about the body associated with a soft persistently rapid pulse form a very clear clinical picture.

The second stage on the attached chart (No 1) shows partial recovery of immunity, loss of symptoms of anaphylaxis, and the febrile condition associated with the arrest of the tuberculosis process.

The slowing of the pulse rate and the remarkable change in its character, together with the low morning temperature which does not rise above 99 all day suggest a good prognosis. H. W. Brest emphasises the importance of this waking temperature from the point of view, *z. e.*, temperature taken rectally immediately, prognosis

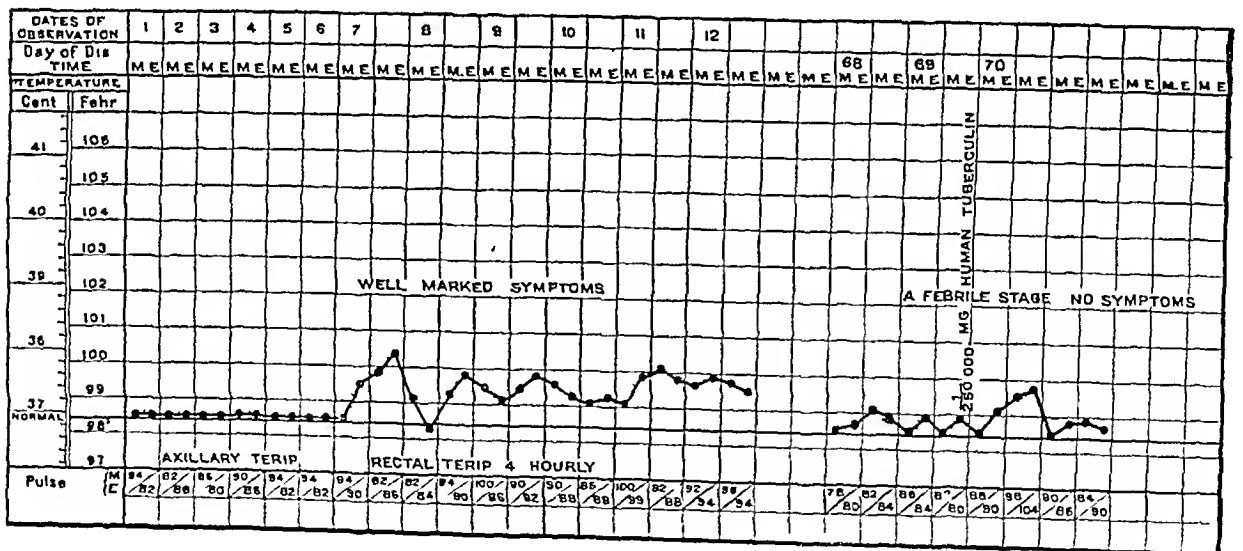
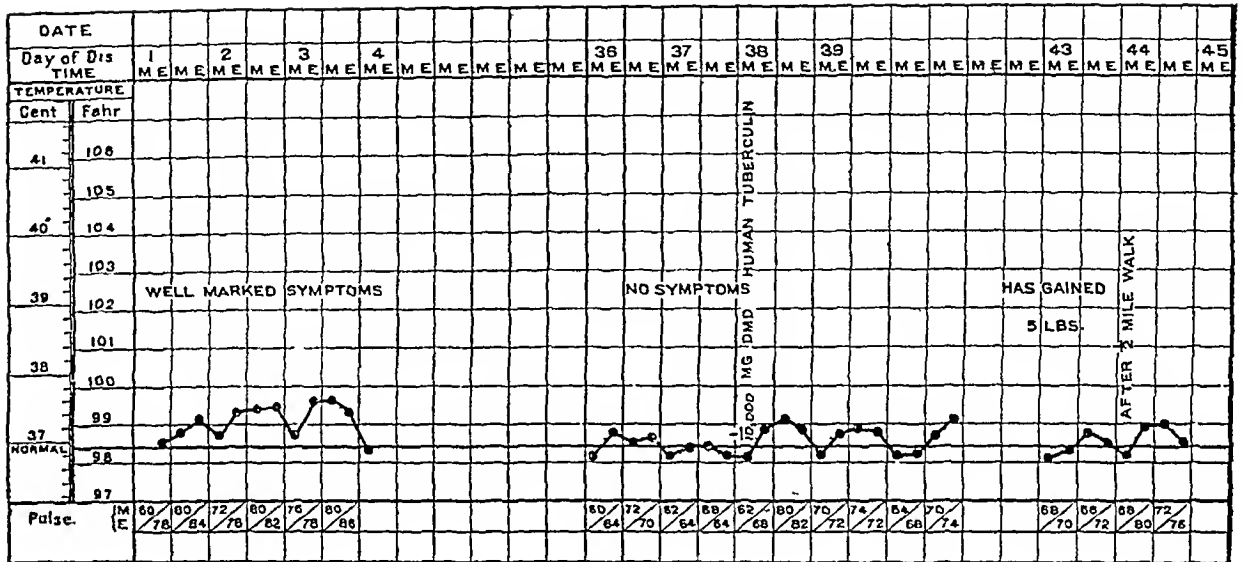
and such observations as I have been able to make on waking entirely support his view.

No II—A Hindu female came to hospital complaining of amenorrhœa and diarrhœa. The skin temperature in the axilla showed no variation, but the persistent high pulse rate and its character, roused suspicion which caused the rectal temperature to be taken. Under treatment she has shown considerable improvement, but still shows the peculiar group of symptoms associated with the febrile condition. She has since developed well marked signs at the R. apex, and is interesting in that we were able to watch their development. Slight riles first made their appearance 24 days after her admission, though her physical condition was actually much improved.

No III—A young Burman had been ill for six months, complained of sleeping badly, of getting easily tired, and of fever. He improved very rapidly under treatment, has lost his symptoms and has done well under injections of tuberculin. The effect of a single injection on his temperature is well shown. He has reached such a degree of immunity as to be able to walk half a mile without any feeling of exhaustion and with hardly any rise of temperature and is now taking graduated exercise under supervision. The limits laid down are that he should not after exercise go above 100° in the rectum, and should fall to normal in half an hour.

No IV—The fourth case is that of an old man with signs of pulmonary tuberculosis in the lungs who has evidently become very highly sensitized to tuberculin. He suffered a great deal from obscure pain about the body and the side of the head and what he described as "burning sensations" about the body. Measured in terms of tuberculin he has a very low degree of resistance, 0.0005 of a mg of dried human tuberculin causes a marked reaction and a return of all his symptoms. Generally speaking, I have found it best to give tuberculin only in cases who have evidently recovered some degree of natural immunity. Cases that have been free of fever for some time are increasing in weight and have no symptoms are the most suitable. An attempt is made to find the maximum dose which causes no reaction as judged by the temperature and pulse. Such a dose appears to have beneficial effects, and as immunity is recovered, the dose that fulfils these conditions gradually increases, and may fairly be taken as the best index of the state of the patient. It is needless to say that what Marcus Paterson describes as the typhoid test is strictly insisted on, and though patients find it unpleasant at first, they quickly appreciate its necessity. As soon as the normal variation 98°—99° in the rectum is reached a slight amount of exercise under supervision is allowed. The futility of attempting to treat a tuberculosis lesion of a joint,

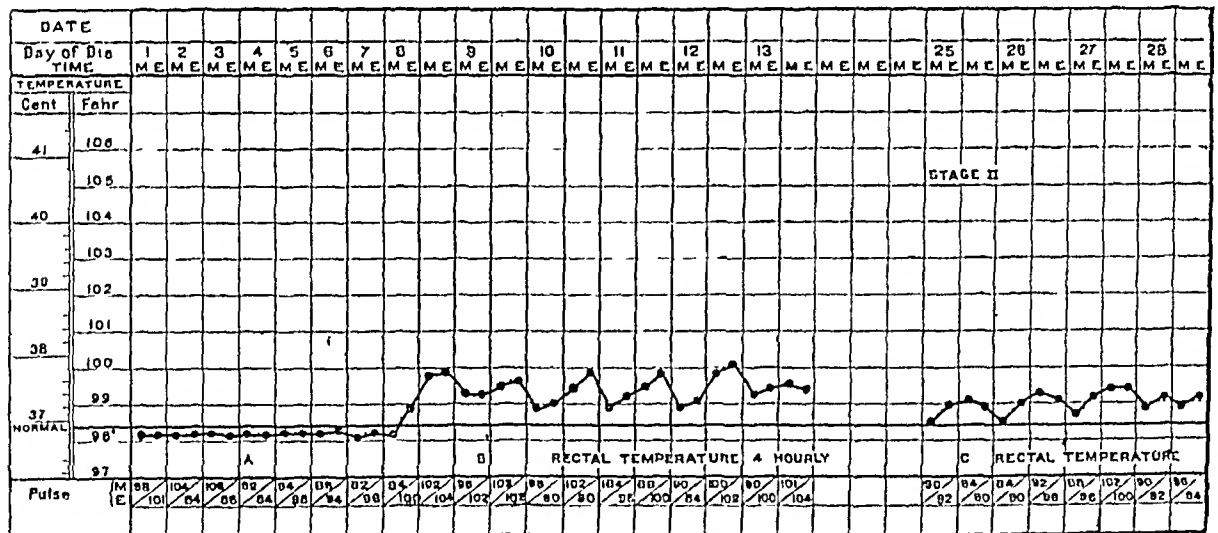
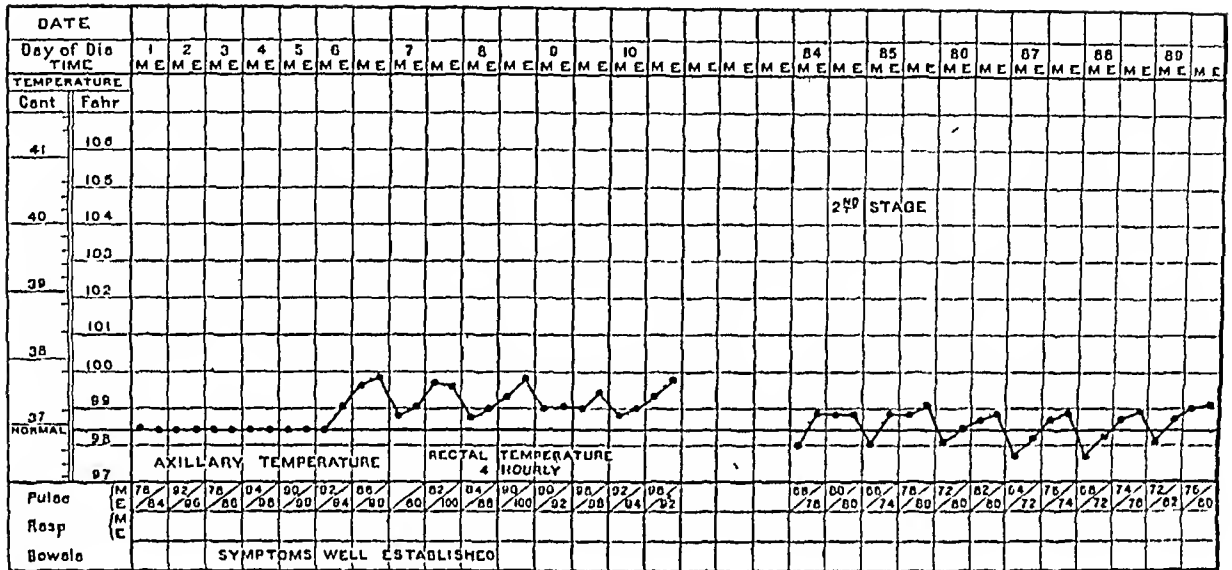
BY CAPT H S MATSON, M B, B S, I M S,
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EARLY TUBERCULOSIS

BY CAPT J L S MATSON, M.D., B.S., I.M.S.,

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for instance, without first immobilising it is recognised, it seems just as reasonable to attempt to reduce the work done by the lungs to a minimum. Since as it has been pointed out with the movements of respiration keep up quite sufficient ante inoculation.

Summary—Anaphylaxis occurs in the early stage of invasion by human tuberculosis. The organism sensitized to a high degree reacts in a characteristic manner, and a number of symptoms chiefly referable to the vaso-motor system occur. These if rightly interpreted lead to a further examination which will reveal a characteristic variation of the rectal temperature which will prove invaluable in the early diagnosis of tuberculosis.

CASE OF LYMPHADENOMA.

By R. H. CASTOR,

LT. COLONEL, I.M.S.

9th October 1911. *Complaint*—Abnormal swellings. Duration 12 months.

Family History—Parents died of old age 10 years ago. An elder brother of fever 18 years ago. None suffered like him. No hereditary taint.

Previous History—No history of my serious illness. Had soft chancre some 4 years ago. Had no secondary symptoms.

History of previous illness—About a year ago he felt a small swelling size of a tamarind seed in right axilla—next left axilla—next right neck and jaw—left neck—right arm—right inguinal and above Poupart's ligament—left inguinal and above Poupart's ligament, and last of all chest. All commenced in the order given, and began to increase slowly till came to present state.

General characters —

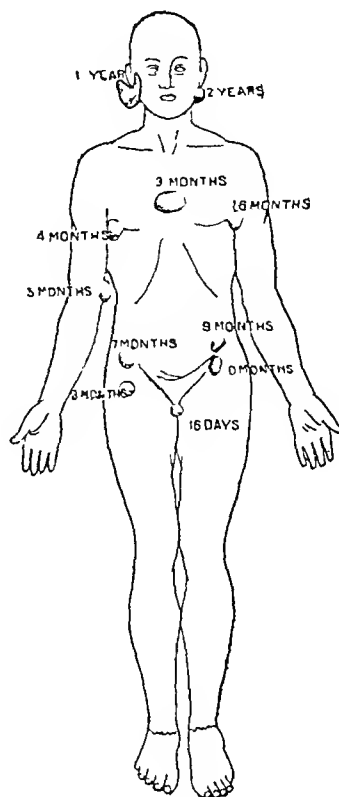
Swellings—enormously large, free, distinct and painless, size large oranges and more. Glands free and moveable. Round and egg-shaped. Glands in the right side of neck are more prominent and enlarged, covering the whole of left jaw, extending to upwards and going in front of right ear and a little above. Pressure on right carotid vessels. So far no trouble except the enlargement of glands and consequent deformity. Eighteen days ago his scrotum and penis too became oedematous.

State of health—Fairly built and at present in a fair state of health.

No enlargement of Liver and Spleen—Lungs normal. Heart sounds, weak, and so is the pulse. Respiration free, bowels regular, tongue clean, appetite and sleep good, urine free. Two years ago he suffered from boils and small pimples in the legs, and at present the skin of both lower extremities is tough much irritation of parts and has to scratch for hours. No nervous complaints. Reflexes present. No rise of temperature.

This was a case admitted in my ward and I think it one worth recording not only for its rarity but for the several factors mentioned below. It

is possible that syphilis may have played an important part in originating the disease, although the history only gives "soft chancres" as being present. It is well known that in the many cases recorded an antecedent history of syphilis is given.



- 1 $5\frac{1}{2} \times 4\frac{1}{2}$, duration 8 months. Collection of 8 Glands irregularly enlarged. The biggest size of orange, the whole size of a papaya.
- 2 Size walnut, 7 months.
- 3 $4\frac{1}{2} \times 4\frac{1}{2}$, Round, size large orange, 2 months.
- 4 Size, orange, 1 year.
- 5 Do walnut, 3 months.
- 6 Do orange, 7 months.
- 7 4×2 , small papaya, 3 months.
- 8 $4 \times 2\frac{1}{2}$ do do.
- 9 Size do 1 do.
- 10 Do do 1 do.

1 *Absence of Fever* is very unusual, and in this case there was no rise of temperature to be recorded.

2 *Enlargement of Spleen* occurs by some authorities in all cases. In this case it was absent.

3 *The Glandular* enlargement most frequently begins in the neck, in this case it originated in the right axilla.

CASE DIAGNOSED ACUTE ANTERIOR POLIOMYELITIS

By J. W. BUTI,

Military Asst. Surgeon, Medical Officer, N. W. Ry.,
Lalamusa.

The patient was a child, age* 14 months, name Golam Nabi, the son of Ching-Din, a taylor of

* Before this illness, the child was able to walk unassisted for about 100 yards.

the village Jowiah near the railway station Jowiah

History—The child was in perfect health till the 1st January 1912 when it suddenly got fever it then refused all nourishment other than that from its mother's breasts. The fever continued till the morning of the 3rd when it completely ceased, there were no complications whatever during the two days of fever.

During the afternoon of the 3rd the parents noticed that the child was unable to use the right lower limb, and that only some very slight movements could be performed by it. All the other limbs were normal.

On the same night the child was very irritable crying all night, so that the parents then decided to seek medical aid.

The child was brought to me on the morning of the 4th, and I managed to persuade the parents to allow me to attend the child daily.

On arrival the child was very irritable exhibiting contractions of the muscles of the back of the neck and the back, producing the condition of opisthotonus, these contractions were tonic and brought on by handling and much movement of the spine, as in turning in bed, these also appeared to be very painful, as at these times the child used to cry very much. The usual length of each contraction was anything from a few seconds to 2 or 3 minutes.

When laid on the bed it would lie quietly in the one position and even go to sleep.

It was obvious that the right lower limb was paralysed.

The child was put to bed and the following administered —

Hyd c Clct c	gr ½
Pulv Rhei co	grs v

at once

Dry fomentation to the spine every three hours

5th January 1912 —The condition was much the same. The paralysed limb can perform some very slight movements such as slightly drawing the thigh up.

No hyperæsthesia could be elicited in the affected limb, sensation was found to be normal.

There was tenderness over the muscles of the lumbar region.

Babinski's sign was absent.

On this day the muscles of the lumbar region were mostly affected during the tonic spasms, those of the neck being better.

There was no constant pain as the child slept through the night without any sleeping draught.

Functions of the bladder and rectum were unimpaired.

Treatment for the day was—

Pot Brom	grs xvi
Pot Iodide	grs viii
Aqua ad	Si
1 every 3 hours	
Fomentation continued	

6th January 1912 —The acute condition was much relieved, but there was still some tenderness of the muscles in the lumbar region. The spasms were much less pronounced and frequent and not so easily brought on, the neck muscles taking no part.

Absence of Kernig's sign

7th January 1912 —On this day the acute condition had quite passed away. On my visit I found the child seated up unsupported playing, the tenderness of the back muscles had completely subsided, it could move its head and trunk round with perfect ease and comfort, the only trouble that was apparent was the then complete paralysis of the right lower limb, all the other limbs remaining perfectly normal. No more spasms.

8th January 1912 —The child was quite well and playful. I tickled the sole of its foot while it slept and it drew its limb up a little.

10th January 1912 —The child did not seem able to voluntarily move the paralysed limb otherwise quite well.

11th January 1912 —As the acute symptoms had subsided the father decided to take his child back to his village and send it here daily for the application of the electric battery in which he has great faith.

The child was never again brought to me, so to enable me to conclude these notes I managed to arrange for the father to take the child to the railway station of Jowiah where I saw it on the 22nd March 1912 (70 days after the child left my care). The condition now is very much improved.

It can walk by holding its father's hand, but the gait is characteristic as the affected limb is everted, the foot pointing forwards and outwards and kept more or less horizontal in walking (the foot being lifted up as a whole and put down in the same way, in other words, there is no bending of the foot forward in walking as is seen normally), the bending of the knee is also extremely limited in walking.

The muscles at the back of the thigh particularly the internal rotators and the calf muscles, are atrophied. I was unable to note their electrical condition, as the child was afraid and would not permit me to apply the eminent. Sensation was good as I tickled the sole of the foot and pinched the calf and in each case it drew its leg up.

Concluding Notes—The child had no rise of temperature during the time it was under my observation.

There had been no erythema as far as I could discover. From the morning of the 7th January 1912, the child was in perfect health except for the paralysed right lower limb. The father gave no history of syphilis, he has one other child, a girl of 4 years, who is quite healthy. On inquiry the parents and others tell me that there are no other similar cases in the village.

Indian Medical Gazette

JULY

THE NEW SANITARY SCHEME FOR INDIA

ALL who have at heart the advancement of sanitation in India will have welcomed the Resolution published in the *Gazette of India* (May 25th) as a further indication of the desire of Government to improve and strengthen the Sanitary Services in India.

The scheme may be thus briefly summarised. It is proposed to decentralise control, widen the field of recruitment and strengthen the admitted weakness of the Sanitary Staff in the larger Presidencies and Provinces.

We are in entire accord with the proposal to allow the Local Governments to select their own Sanitary Commissioner provided that he is a fairly senior man, with not less than 15 years Indian experience*. We also recognise the wisdom and the necessity of increasing the number of Deputy Sanitary Commissioners in such large administrative areas, as Bengal, Madras and the United Provinces.

Our readers will, however, have noted that these appointments will no longer be reserved for service men, and it may therefore happen in due course that the head of the Sanitary Department will not be a service man.

To what class of medical men will the future Deputy Sanitary Commissioners belong?

We may note that the Resolution makes no provision for any concession to service men, and we are all aware that in recent years these appointments have not been popular in the service. There are many reasons why this should be so and why service men, with a wide choice of a career, seldom accept a sanitary appointment. The pay is not attractive (comparatively speaking), and men are kept, it may be for years, on officiating (*i.e.*, still lower) rates of pay. The prized privilege of being allowed to spend a portion of the non-touring season in the hills has been in some provinces withdrawn. There is a vast amount of touring to be done and difficult and uncomfortable travelling in the interior of districts. The work cannot be said to be interesting, but only mainly because it is unproductive. An inspection of a

municipality and a report thereon rarely leads to executive action. A peripatetic appointment like this does not appeal to a married man, and unless a man sees a fair prospect of promotion to the only desirable appointment, the Sanitary Commissionership, he has little to attract him to remain in the department.

If then service men are not attracted to these posts from what class will they be recruited—European and Indian?

The qualifications laid down are a British registrable qualification and in addition a British Diploma in public health*. This implies 5 or 6 years' study for a degree or diploma, and about another year for the diploma in public health.

What is offered in return for these qualifications—pay from Rs 500 to Rs 900 a month, in a few cases Rs 1,000 per month, and no pension. The leave rules are those for the Indian services (we presume Chapter XIV of C S R). Private practice is forbidden and rightly so, if we mean practice as a physician and surgeon—but we see no reason why these officers should be debarred from earning a fee for the inspection of a building, a factory or a place for making soda-water, etc., which could not be said to interfere with his public duties. Will these terms attract, and keep, European medical men with the necessary qualifications? The absence of a pension will, we think, keep off the majority of Europeans otherwise desirable or suitable.

Will the terms attract the duly qualified Indian? We are by no means certain. The Indian students who have the grit and the means to go to Europe either try for or enter the Indian Medical Service or intend to return to their native land and establish themselves as practitioners in one or other of the large cities. No doubt some of the failures will be attracted, but this is not the class which it is desirable to recruit for these important duties.

Again these terms compare unfavourably with the pay already given for similar posts in such cities as Calcutta, Bombay and Karachi. They do not even compare well with the pay, house and other allowances given to the Medical Officers of tea estates.

We are, therefore, not convinced that these terms will attract the most suitable men, and we fear that the appointments may be accepted as

* This 15 year rule should not be made to apply to officiating appointments.

* In this connection we see no reason why the new diploma of Tropical Medicine and Hygiene, or such, should not be equally qualifying—as they are equally useful.

stopping-stones to some better offer. There is no pension to attract them to stay.

We may now turn to the portion of the resolution which deals with the executive establishment of the sanitary services. We entirely agree with the remarks on the present inadequacy of the staff of trained Health Officers in India.

The Government of India contemplate the establishment of two classes of Health Officer, and we are glad to see the hint about the necessity for security of tenure of these appointments. These officers cannot be left at the mercy of Local Boards and Municipalities. For the posts of Health Officers of the first class a registerable qualification (presumably British) and for the present a British Diploma in Public Health, *i.e.*, exactly the same qualifications at present as those required of a Deputy Sanitary Commissioner and even more than is required for His Majesty's Commission in the army. We very much doubt if the pay considered "suitable" for Health Officers of the first class, *i.e.*, Rs. 300—20—Rs. 500 will attract the right sort of man with the above expensive qualifications, unless it is seriously proposed to allow these Health Officers to supplement their income by private practice—as no prohibition of private practice *for this class* is made in the Government of India Resolution.

As to Health Officers of the second class the pay offered is Rs. 150 to 300. The qualifications laid down are "a good general education supplemented by a course of training in public health." In fact the qualifications of an "Inspector of Nuisances," and in what degree differing from the training given to Sanitary Inspectors to whom we refer below. Surely these men are not to be allowed the *same title* as the duly qualified medical men who are expected to form the Health Officers of class I.

Under these Health Officers we entirely agree that a class of trained Sanitary Inspectors are needed. In Madras such a class has existed since the days of Colonel W. G. King, I.M.S., and proposals to train such useful subordinates are in hand in other provinces.

We have said that we welcome the steps now taken by the Government of India, though we have freely pointed out what seem to us to be the defects of the scheme. It is a landmark of sanitary progress and an indication that the Government of India have seriously taken in hand the great and pressing question of the extension of sanitation and the improvement of the public health in India.

THE PROTEIN ELEMENT IN NUTRITION

SOME years have now passed since the publication of Chittenden's work on the protein requirements of the body. At the time and for varying periods afterwards his findings were considered by many of sufficient importance to cause them seriously to consider the advisability of advocating the adoption of his standards. The main conclusions arrived at by Chittenden after a most painstaking and laborious piece of work are well-known to all, consisting essentially in an earnest plea for a large decrease in the protein content of the diet and at the same time a lessening of the caloric value by a diminution in the fats and carbohydrates also. In a subject such as the nutrition of man new views had to be supported by evidence arrived at from exact experimental findings carried out on a large scale. Such evidence Chittenden's extensive work appeared to afford. Similarly, the only method by which any fallacy in his proposals could be demonstrated, would be by investigations on at least as extensive a scale and over longer periods of time. Thus in the nature of things meant that Chittenden's views were bound to hold the field until the necessary interval required for further experimentation had elapsed.

Even at the first, however, there was a very general feeling amongst those conversant with the subject that a fallacy lay somewhere, and that his views on the amount of protein and calories necessary for the nutrition of the average individual could not be accepted. There were not wanting those who criticised very severely his results, some on general principles, some from the knowledge derived from specific investigations. Sir James Crichton-Browne and Benedict were amongst the ablest of the early writers strongly opposed to the acceptance of Chittenden's contentions. We need not enter into the many arguments advanced by these and other opponents, although of very great interest and importance, they were largely theoretical or based on evidence derived from observations on animals, and therefore might be considered of inferior value to the direct evidence and facts as set forth by Chittenden from practical work on man himself as the subject. Damaging criticism was directed, however, against the two main contentions, *i.e.*, that man could live on about one-third of the ordinary accepted protein standard and that this minimum was the optimum, and further that the caloric requirements of the ordinary individual had been

grossly over-estimated Chittenden holds that the metabolism 0.12 gm of nitrogen per kilo of body weight, or in round numbers, the presence of 60 grms of protein in the daily food and a fuel value of 2,500 calories is more than sufficient to meet the needs of the body this means a reduction from the Voit standard of 50% of the protein and about 30% of the heat value of the diet

It is with considerable satisfaction that we are able to state that the subject of nutrition owes its most important contribution to the medical profession in India Chittenden's conclusions have been fully met and shown to be fallacious by experimental work on the people of this country carried out on a far more extensive scale than his original investigations The study of the people of Bengal by the staff of the Physiological Department at the Medical College in Calcutta, and later studies on the different races of Bengal, Orissa, Bihar, United Provinces, and the Punjab, have been accepted as conclusively proving that whilst an individual or race may subsist on a standard of protein metabolism such as Chittenden advocates, the results are not such as those wished for in the development and physique of a people The widely accepted opinion on the value of the Indian investigations was voiced by Chittenden himself in opening the discussion on "The Merits of a Relatively Low Protein Diet" at the last annual meeting of the British Medical Association

His words were — "Of greater interest and broader physiological value is the work of Professor McCay, of the Calcutta Medical College, on the metabolism of the people of Bengal and its bearing on the problem of nutrition—work that is truly scientific and thorough in its character, and which must command the respect of any one who studies it understandingly, even though he may not be able to accept all the conclusions presented McCay finds that the average daily amount of protein material metabolised by the Bengali is about 37.5 grams, the equivalent of 6 grams of nitrogen"

"The results presented substantiate the view that the race can exist on a dietary the protein content of which is less than half that demanded by the ordinary standards It is contended, however, that the miserable standard of the Bengali's physical development is seemingly entirely due to the low scale of protein absorption"

"Further, the general lack of good health, lack of vigour and capacity for manual labour, low resistance to disease and infection, are all attributed to the low level of protein metabolism at which these people live It is claimed that 'with a diet poor in nitrogen, individuals are produced who are deficient in muscle,

poorly supplied with blood, and who exhibit defective development' In a word, it is generally considered that the results of this admirable study of the nutrition of the Bengali furnish convincing proof of the total inadequacy of a low protein diet"

Space will not permit us to enter into details of the different lines of research that have been pursued in attempting to arrive at some definite conclusion on this most interesting subject, and to decide between the conflicting views held by Chittenden and his opponents suffice it to state at present that Chittenden stands practically alone in his contentions On present purpose is rather to call attention to new evidence and the findings of experiments carried out in other countries Aton, working in the Philippines, has shown by a series of experiments on dogs the evil results that follow on dietaries low in protein his results corroborate and carry a step further the conclusions of Munk, Rosenheim, and other earlier observers

More recently still Loeser in the *Transvaal Medical Journal* publishes a most important paper on "Diet of Mine Natives" in which not only are Chittenden's views severely criticised, but it is definitely shown that an increase in the protein metabolism has been accompanied by a greater degree of industrial economy and a diminution in morbidity and mortality Loeser states after a careful consideration of the whole question —

"Economy in feeding is of the greatest public and industrial interest, but I have yet to find any one in this country prepared to count disaster by feeding the native mine labourer on Chittenden's principles"

He compares the condition of the Bengali's nutrition with that of native mine labourers before the introduction of their present scales as follows —

"McCay, in his description of the Bengali, has given a picture of what our local conditions have been The improvements that have been made have been associated with an increase of the protein content of the mine labourer's diet, in particular an increase in the quantity of meat protein Under the circumstances, it would be, to say the least, hazardous to follow Chittenden's ideas"

Loeser, not content with demonstrating the fallacy of Chittenden's standard as applied to the miners of the Transvaal makes a statement, we do not know on what authority, that goes far to shatter the conclusions arrived at by Chittenden from his long series of experiments on a group of soldiers, thus lessening by nearly one-half the force of evidence brought forward in

support of the adequacy of a low protein dietary

Loeser states, from evidence obtained from a number of the men after the experiments were concluded that several confessed to having "square meals on the quiet"

If this is authentic, it would cover two very important and hitherto inexplicable findings in Chittenden's results on this group. One was how men of average body-weight could carry out the laborious duties assigned to them daily, such as drill, gymnastics, hospital duties, etc., on a diet whose fuel value was little more than sufficient to meet the energy requirements of the body when at rest, without the bodily tissues being drawn on. The other was the exceedingly irregular degrees of protein absorption exhibited by these dozen men from dietaries stated to be absolutely identical. We need not labour these points, but when men are found to be living seemingly on dietaries presenting 2,500 calories, and it is known from the work done that there must be an expenditure of over 3,000 calories, and further, when living on identical diets the different individuals exhibit degrees of protein absorption that vary over 20 per cent, it does not require any very great reason to arrive at the conclusion that some fallacy has crept in. The explanation is simple in the light of Loeser's statement, and is one that at the same time makes clear why Chittenden did not discover from his analyses of the excreta that the men were not acting honestly, which, under normal circumstances, he would have found out immediately. These soldiers, knowing that the analyses of the excreta would betray their indulgence in food beyond that prescribed, took care to surrender only a part of the urine and faeces passed daily, thus leading Chittenden to believe they were living on the diet laid down.

We can only express our sympathy and regret that so much hard and painstaking work should have been rendered in conclusive by a lack of honesty in the subjects of the investigation. The fact that throughout the world those races that count "in the catalogue" as men consume at least 100 grams of protein affords very strong evidence that the protein element should not fall below this amount, and where hard muscular work is demanded, an allowance considerably in excess of this standard is essential if the body is to be maintained in an efficient and economical condition.

Current Topics.

CONFERENCES OF MEDICAL OFFICERS

We direct attention to the letter from Major T. H. Delany, F.R.C.S.I., I.M.S., in these columns (p. 293) on the need for more frequent conferences among medical men in India.

Without doubt Major Delany has raised a question which will excite considerable interest. No men serving the Government of India are more isolated than medical men in civil employ in India and no men need more the free interchange of opinion and experience. Many Civil Surgeons have served together for years in the same Presidency or Province and have never met. Service dinners and medical congresses (at too distant intervals) are of great use, but more frequent conferences are certainly needed. The medical men in an isolated village in England has his local medical society in the county town, or the nearest capital. The Civil Surgeon of India ever doing splendid work is for month after month surrounded by non-medical men and seldom exchanges an idea on medical subjects except on the rare and not always welcome day when he meets his successor and is transferred to the scientific loneliness of a similar station. Men in the Presidency Towns and Capitals have their societies, the man in the Mofussil has none—on their behalf we plead. Nowadays we hear of Commissioners' conferences, conferences of Magistrates. The Police Departments are keenly alive to the value of such meetings, why not the Civil Surgeons?

The first thing to do is to have informal meetings of the Civil Surgeons of say, any Divisional Commissionership, let them have a meeting from Thursday to Monday at one or other district head-quarters in turn, it may be quarterly, half-yearly and certainly yearly. To take a concrete example, the Civil Surgeons of Bihar or of Tinhoot could meet at Bankipore or Mozufferpore. The Civil Surgeons of Oudh would meet at Lucknow, the men in the N.-W. Frontier Province at Peshawar, the men in Upper Burma at Mandalay.

Much good would result. We commend Major Delany's letter to the attention of Inspectors-General in every province. More such meetings are needed, just as more frequent medical congresses are needed, we hope this matter will be taken up.

"FOR AND AGAINST EXPERIMENTS ON ANIMALS"

UNDER this title Mr. Stephen Paget, F.R.C.S., the redoubtable protagonist of the Research Defence Society, has published a most valuable book, which we strongly commend to our readers. It is a synopsis of the final report of Royal Commissioners on vivisection which was

published on 12th March 1912, four years after the Commissioners had ceased to hear evidence. The voluminous report itself is obtainable from Messrs Wyman & Sons, Fetter Lane, London, E C, at the price of 1s 3d, but many will prefer to find the pith of the report in Mr Stephen Paget's volume.

This volume is prefaced by an introduction by Lord Cromer, and it was written at the request of the Committee of the Research Defence Society.

It is very desirable that the conclusions of this report should attain a widespread publication, and as scientific men are not given to the energetic controversial methods of the "antis" it is very satisfactory to find the whole question so ably and so clearly put as in the volume before us.

In Lord Cromer's words "broadly speaking the supporters of vivisection have proved their case."

A small body of extremists consider that "vivisection whether painful or painless is morally unjustifiable." The conclusion of the Commission on this point of ethics is "after full consideration we are led to the conclusion that experiments on animals adequately safeguarded by law, faithfully administered are morally justifiable and should not be prohibited by legislation."

The next point is to consider how far recent admitted progress in Medical Science is to the knowledge acquired by experiments conducted upon living animals. The conclusions of the Commission are stated as follows —

1 Certain claimed results have been found by later experience to be fallacious or useless.

2 *That, notwithstanding such failures valuable knowledge has been acquired, and useful methods for the prevention, cure and treatment of certain diseases have resulted from experimental investigations upon living animals.*

3 That it is highly improbable that without experiments made on animals, mankind would at the present time have been in possession of such knowledge.

4 That in so far as disease has been successfully prevented or its mortality lessened suffering has been diminished in man and in lower animals.

5 That there is ground for believing that similar methods of investigation if pursued in the future will be attended with similar results.

Mr Paget's volume first of all gives the text of the Act of 1876 (Vict 39 & 40, c 77) which is entitled "An Act to amend the law relating to Cruelty to Animals." It was founded on the representations of a Royal Commission appointed in June 1875. Then follows the evidence of the most important witnesses examined by the Commissioners, the first being Mr W P Byrne, a Principal Clerk in the Home Office,

who gave evidence as to the actual working of the Act and as to the granting of licenses.

We need not here enumerate the names of all the witnesses whose evidence is summarised by Mr Paget, we can only quote a few of the best known names, *eg*, Mr G D Thane, the Anatomist, Sir James Russell, an Inspector under the Act in Scotland, Sir Wm T Stoker, Inspector in Ireland since 1879, Professor Stirling, Professor Shaefer, Professor Langley, Sir W H Power, of the Local Government Board, Sir Douglas Powell, Sir T Landel Brunton, Major Leonard Rogers, I.M.S. (whose evidence runs to 12 pages of the volume), Dr C J Martin, Professor Sims Woodhead, Professor Rose Bradford, Professor Lorrain Smith, Sir H Morris, Sir Victor Horsley, Professor Cushman, Sir David Bruce, Sir W Osler, Dr Dudley Buxton, and Dr Waller. On the antivivisection side full accounts are given of the evidence of Miss K Cook (Mabel Collins), Dr H Snow, Miss Ariabella Kenealy, Miss Lindaf-Hageby, Mr S Coleridge and Lt-Col Lawrie.

The Commissioners discussed Lt-Col Lawrie's views and somewhat contemptuously dismiss them as "either misapprehended or inaccurately described."

Royal Commissions are notoriously slow in action, and hence the report omits reference to such discoveries as Flexner's serum treatment of cerebro-spinal meningitis, Ehrlich's work on syphilis, the banishment of Malta fever from troops in Malta and in Gibraltar.

The report is unanimous, and we hope the result will be for the advancement of science and the good of mankind.

THE BIOLOGICAL TESTS FOR BLOOD STAINS

IN our issue for March 1911, we advocated the introduction into India of the biological tests for blood-stains, and our readers are aware that Lieutenant-Colonel Sutherland has published a *Scientific Memoir* as the result of his work on the subject in Calcutta. We are, therefore, very glad to see the following strong pronouncement by the Chief Justice of Bengal on the need for the institution of a laboratory for these methods for the use of all India. Such a department we were informed is to be part of the new school for Tropical Medicine in Calcutta, and the sooner it is brought into working order, the better. The following is the report of the remarks of Chief Justice as given in *The Statesman* of May 28th, 1912 —

"In summing up the evidence to the Jury at the High Court Sessions on Monday, in a case in which a coachman named Azim Khan was charged with murder, his lordship the Chief Justice made some remarks about the removal from Calcutta of the department for the analysis of blood stains.

Sir Lawrence Jenkins said there was evidence in the case that there were stains of blood on the accused's coat, waistcoat and cap. When the papers in the case were first placed before him, he found that there was evidence of these blood stains on the accused's clothes,

and that the Chemical Examiner had pronounced them to be mammalian. Nothing more. He (the Chief Justice) at once communicated to those having the conduct of the case his desire that such tests should be applied that an opinion could be formed as to whether the stains were of human blood or not. He found, however, that this could not be done, and that the proper appliances for the carrying out of such tests were no longer in existence in Calcutta. A short time back there were these appliances here and they were under the charge of a member of the medical service who had an established reputation in connection with this subject of blood stains. He very much regretted, and he was inclined to think the jury would share that regret that this very valuable aid in the detection of serious crimes of this description had been allowed to fall into disuse. This method of examining blood stains had passed beyond the experimental stage, it was extensively used outside India, and such a high authority on jurisprudence as Taylor said that in the hands of a capable man the results were absolutely trustworthy. The Jury were deprived of the benefit of this system and all that could be said of the stains in question was that it was mammalian blood.

The Jury in giving their verdict, added a rider to the effect that the test mentioned by his lordship would ere long be introduced so as to enable them to arrive at a correct decision in all cases of murder."

THE LESSONS OF THE PLAGUE IN MANCHURIA

"And now the suns deliver us from fleas"

C. S. Cutler

We have already quoted the conclusions arrived at by the International Commission on the fierce outbreak of plague in Manchuria and this subject was discussed at a recent meeting of the Asiatic Society of Bengal, the matter being introduced by a paper by Dr W. C. Hossack, which we reproduce in this issue.

Up till very recently the rat flea theory of transmission held the field and the majority of men who know plague well are still convinced of the truth of this theory as demonstrated and seemingly conclusively proved by many Commissions and Committees which have exhaustively studied the question.

While however we believe that the rat flea theory holds the field it would be unscientific as well as unwise to belittle or ignore opinions on the other side.

Dr Hossack, who is well acquainted with plague as seen in Calcutta during the past dozen years or so has ever been a severe critic of the current views, and he is supported by a not inconsiderable volume of continental opinion.

In the *Centralblatt für Bakteriologie*, etc (49 Band, 1911) appeared a critical review by Professor Galli-Valerio on the subject who rather exaggerates what he considers to be a partisan feeling against all who question the truth of the rat-flea theory. He writes "If in place of boycotting them as the blindly zealous partisans of the rôle of fleas have done, they had only read the works of Hossack they would not have been surprised at the sudden appearance of the great epidemic in Manchuria, and instead of vociferously demanding the convocation of a useless Conference at Kharbin, they

would have said that this epidemic is no way a departure from the ordinary run of events in the epidemiology of plague."

That the plague outbreak was exclusively pneumonic and intensely fatal does not admit of a doubt. In the discussion in London it was even hinted that the disease differed so much from ordinary plague outbreaks that it may conceivably have been due to a somewhat different microbe. We may admit that the connection between the *tarbagan* (marmot) and the spread of cases was not proved, even its origin from *tarbagan* infection is not beyond doubt. Many of the speakers at the Mukden Conference were convinced that this disease was the same disease as bubonic plague, and that it would be dangerous and rash to separate the two.

Prof Zabaltov said "I believe we must arrive at the conclusion that bubonic plague has existed in Manchuria in an epidemic form as well as pneumonic plague, and we cannot say what will happen some months later. We may (he said) see a bubonic epidemic in May next. We cannot draw up regulations for pneumonic plagues leave out of consideration bubonic plague."

We hold no brief for either party, the matter is one for observation. The rat-flea theory apparently cannot explain the virulent pneumonic outbreak in Manchuria, and it is absolutely clear that it behoves the adherents of the rat-flea theory of plague to reconsider their attitude in view of this terrible outbreak. We have been convinced supporters of the rat-flea theory of the pandemic plague of the last 16 years in India, but we must admit that the Manchuria outbreak has thrown a flood of light on the opinions of those who have not been content to accept the rat flea as the sole medium of communication of this fell disease between man and man.

The subject is of such great importance that we invite correspondence on the subject.

PLAGUE IN TARBAGANS

In view of the interest excited by the great outbreak of pneumonic plague in Manchuria and the uncertainty as to the connection of the disease with the marmot or *tarbagan*, the following extracts from recent Russian reports are of special interest.

It has been admitted for years that a fatal epizootic does attack the marmot or Manchurian *tarbagan*. Dr Clemow in 1900 (*B. M. J.*, 10th May 1900), in a paper on plague in the lower animals summarised papers by Bieliavski and Rinschetskoff and we may quote from recent articles—

"Tchoussiov in a recent article, reaches the following conclusions regarding the presence of plague in the *tarbagan*. "(1) The *tarbagan* is the marmot of Asia, which is distinguishable in no way from that of Europe. (2) Plague in *tarbagans* is proven only in Asia and especially near certain plague centers. Plague in *tarbagans* has never been proven in Kamchatka and Altai. (3) *Tarbagans*, in case of necessity, eat meat and are able without doubt to devour human plague

cadavers left on the ground, and, as a consequence, to become infected with plague (4) Plague does not appear spontaneously among tarbagans. They become infected with plague by the intermediation of human cadavers, and are able then to give plague to man when he hunts them (5) The mortality among tarbagans is due to various causes. Besides plague, it suffers from other contagious diseases, without speaking of the mortality due to famine (6) In devouring plague cadavers tarbagans become infected by way of the external mucous membranes and cutaneous lesions (7) The natives and Transbaikal Cossacks become infected with plague in removing the skins from tarbagans when a friction with infectious material takes place, and also by the intermediation of fleas from tarbagans. With the mucous membranes of the digestive tract intact it is difficult to admit the possibility of infection by meat (8) It is necessary to admit that in the Transbaikal Province there exists or has existed an endemic plague center similar to that which exists in the government of Astrakhan."

The Manchurian outbreak of 1910-11 has been stated to have originated among tarbagan hunters.

It was of a virulent pneumonic type and spread from man to man by direct contact. Many rats were examined and were found to be not infected. In the autumn of 1910 no less than 96,000 Chinese coolies went into Manchuria to trap tarbagans for their fur. Evidence points to the fact that plague originated among coolies who handled tarbagans, and the tarbagans were reported to be suffering from a fatal epizootic.

It is also admitted that natives of Siberia and Mongolia suffer from a contagious and highly fatal disease contracted directly from the Marmot and Tschonshov (*Bull. del' Orient Inst. d' Hyg. Pub.*, Sept. 1911) has proved that tarbagans are susceptible to being infected with the *h. pestis*, but it is admitted by Kitasato (*Lancet*, May 13, 1911) that it is not yet bacteriologically proven that the epizootic of tarbagans is real plague. As bearing on the flea question the following summary is of interest—

"On account of the rôle played by fleas on rats and ground squirrels in the spread of plague it will be interesting to definitely determine if tarbagans harbor these parasites and if fleas are responsible for the spread of the disease among these rodents and its transmission to man. The existence of some such agent might be predicted, as plague is reported to exist in certain places in Siberia and Mongolia in endemic form both among animals and man.

Petrie (23), of the Lister Institute, a British delegate to the International Conference at Mukden in April, 1911, reports having examined 12 tarbagans sent direct from Manchuria to Mukden. Thirty-five fleas were found, with an average of 3 per animal, 12 being found on one. April was considered the season of least prevalence of fleas, and his findings suggest that tarbagans, during the flea breeding season, are infested with fleas. The fleas found were unusually large, and appeared to resemble the flea belonging to the genus *hystichopsylla*.

Tuck (24) suggests the flea as an intermediate host and states that there seems to be no great mortality among tarbagan hunters while in the field, but that the disease spreads rapidly when these hunters return to the market places in winter and crowd into insanitary dwellings."

CAPTAIN McCARRISON'S WORK ON GOITRE

CAPTAIN R. McCARRISON, M.D., recently read a paper at the Royal Society of Medicine on the

vaccine treatment of simple goitre. He writes as follows—

"The vaccines that I have employed were prepared from organisms similar to these normal and harmful inhabitants of the intestines. There is at present no evidence that any one of these possesses a specific influence in the production of goitre. The conclusion, therefore, is suggested that the thyroid gland is called upon to combat several poisons normally present in the human intestine. When to these is superadded the specific virus of goitre an abnormal element is introduced, and an extra strain is thrown upon the gland. Unassisted, it undergoes hypertrophy in many cases, but if assisted in any one direction it is capable of performing the additional task which has been imposed upon it, and of combating the abnormal virus. On the assumption that no one of the different vaccines which I have employed contains the specific organism of goitre my explanation of their action in this disease would be that they cause the disappearance of the goitre by relieving the thyroid of part of its normal work, thus enabling it, without continuing in a state of hypertrophy, to destroy the specific toxin of goitre.

The vaccine treatment of goitre which I have described leads us to two important conclusions. In the first place, it confirms the view of the etiology of the disease which I enunciated several years ago—namely, that goitres are due to the presence of a living organism of disease in the intestinal tract, and secondly, it demonstrates that the thyroid gland is markedly influenced by the nature of the bacterial flora of the intestine, and that one of its chief functions is to protect the body from the many toxic substances which find their way into the blood stream from the alimentary tract. This latter conclusion is substantiated by some experimental work which I have lately published. The experiments show that the thyroid glands of goats undergo marked changes as a result of the continued contamination of their food with cultures of micro organisms grown from the faeces of goitrous individuals."

It is known that Captain McCarrison has been chosen to deliver the Milroy Lectures for 1913. And his subject will be the *Ætiology of Goitre*. This is the second time in the past few years that an I.M.S. man has been chosen for this important lectureship, our readers will remember Major L. Rogers' lecture on *Kala Azar*, etc.

Captain McCarrison has been at work on goitre in a small endemic centre of goitre in Co. Antrim and has recently visited Switzerland along with Mr. James Berry at the invitation of Prof. Kocher of Berne, the well known European authority on goitre.

It is to be hoped that on his return to India Captain McCarrison will be able to continue his researches into this important subject, an appointment to such a place as Nipal would give him the needed opportunity, and we hope that some such arrangement will be made.

SOME INQUIRIES REGARDING SPRUE

MAJOR P. M. ASBURN, the Chairman of the U.S. Army Board for study of Tropical diseases at Manila, has published the following Note on our knowledge or rather on our ignorance of Sprue (*Manila Bulletin*). Sprue, if not so bad in India as in the Far East and Ceylon, is still far from unknown and its connection with hull diarrhoea,

and other forms of chronic diarrhoea is still undetermined *

There is much to learn about Spue and as we of the Tropical Board have set ourselves to attempt to learn at least a part of it we have taken this opportunity to bring the subject to the attention of this Society and to ask your interest in the subject and your co-operation in the work as it is only so that we may hope either to see many cases or to make much progress—

The questions that may be said to be unsettled in regard to this disease are many and embrace—

- 1 Its existence as a distinct and separate disease
- 2 Its distribution throughout the world or tropics
- 3 Its racial incidence
- 4 Its cause
- 5 Its symptoms and manifestations, their method of production
- 6 Its relation to dysentery and other diseases and to mode of life
- 7 Its involvement of the pancreas and liver
- 8 Its pathology
- 9 The prognosis
- 10 The treatment

Considering these points briefly we turn to find—

First—That its existence is a distinct and separate or specific disease is undetermined, some writers considering it such, while others regard it merely as a symptom complex indicative of a much lowered state secondary to dysentery, malaria and other tropical diseases

Second—Its distribution throughout the world is not determined, some writers (as Manson), considering that it is found throughout the tropics, others (as Brown, whose monograph on the subject is the most extensive that we have yet read), thinking that it is limited to the eastern hemisphere and particularly to Eastern Asia

Third—Its racial incidence is likewise not a subject of agreement, Brown for instance, saying, that it is a disease of the white race, while Dr Musgrave informs us that some of the most marked cases that have been treated in the Philippine General Hospital were Filipinos

Fourth—Its cause is quite unknown, some considering it merely a cachectic state secondary to and dependent on other diseases, some as Dantec, who ascribes it to a yeast, regarding it as a specific infection

Fifth—There is general agreement as to the symptom complex that makes up the picture of a well marked Spue, but how few of the symptoms may be enough to justify the diagnosis is not certain, nor is it known how the symptoms are produced, why for instance, the tongue is sore, the stools pale and frothy

Sixth—The uncertainty as to its relation to dysentery and other diseases has been mentioned Does the mode of life influence it? Brown says that temperance or even abstinence from alcohol offers no protection, that total abstinences seem to furnish more than their share of subjects

Seventh—The fatty, fermenting, frothy, white stools and the decrease in size of the liver and the Cambridge reaction have been taken to indicate involvement of the liver and of the pancreas, though other evidence of their involvement is not marked, and there is some evidence that both organs are functioning normally

Eighth—The statements as to the pathology of the disease are mostly rather general and show little more than that the tissues of the alimentary tract are inflamed and later atrophied

Ninth—The prognosis of the disease is generally regarded as poor, as regards recovery, but just how poor

* Since writing the above we have received Dr C Beggs' book on "*Spue, its Diagnosis and Treatment*" (Bristol J Wright & Sons Price 6s) He gives a full account of his very successful treatment by *old yellow Santonin* We will review the book fully in next issue and we recommend all our readers to get the book—ED, I M G]

is not sufficiently well known Do cases recover permanently, and if so, what proportion of them

Tenth—The treatment most commonly recommended is a milk diet, but how far this is true, because it is the advice of Manson and a few others and how far because it has been found the best? If the best treatment, why is it so? Good results are reported from the administration of santonin, from diets of strawberries, oranges, mangoes, bananas and other fruits, and from meat diet and from farinaceous diet What, if anything, have these methods of treatment in common?

ORIENTAL SORE

THE fiftieth number of that admirable series of *Scientific Memoirs* by I M S Officers is from the pen of Capt W S Patton, I M S, the acting Director of the King Institute at Guindy, and is specially devoted to a survey of the ætiology of oriental sore in Cambay, where the disease prevails endemically and is said to have existed for the past 250 years

Capt Patton points out that many other sores and boils are confused with the true oriental sore or *dermal leishmaniasis*, as it is clumsily but correctly called in a recent issue of the *Kala Azar Bulletin* (Vol I, No 2, 1912, page 103)

Capt Patton is opposed to the view put forward by Dr Row of Bombay, that the house-fly is the carrier of the parasite of this sore His observations also show that lice are not the natural invertebrate hosts of the parasite, Capt Patton also acquits mosquitoes and other biting flies, and in view of the fact that the flea *Cenoccephalus canis* is the probable transmitter of canine and infantile *Kala Azar* he examined many fleas but found them not to be infected with this parasite He then gives an account of his observations in support of his theory that the bed-bug *Cimex rotundatus* is the insect transmitter of the disease at least in Cambay

The second number of the *Kala Azar Bulletin** is an extremely complete and able review of the recent literature of *Kala Azar*, and a map of the middle East shows the widespread prevalence of infantile *Kala Azar* The account of this infantile disease is very complete There is also an excellent review of modern views on "dermal leishmaniasis" or oriental sore which deals with its prevalence not only in the Orient but in Brazil and other parts of South America The section on the blood in oriental sore is good, as is also the full chapter on treatment, and Capt Broome's paper (*I M G*, 1911, April, p 156), is quoted

Dr Darling, of the Canal Zone, has also a valuable paper on oriental sore in the *Journal of Cutaneous Diseases* (December 1911) The disease has been well known for over a century and a half, since the publication of Alexander Russell's book on Aleppo (London, 1756) As its geographical distribution in the new world is at present limited apparently to localities where

* London Sleeping Sickness Bureau, Royal Society, 1912

medical laboratories exist, we may expect in the future to hear more of it in America. The difficulty of diagnosis between oriental sore or dermal leishmaniasis and other chronic ulcers is noted by Darling who quotes with appreciation the remarks of Major S. P. James, I.M.S., on this point (*Sci. Memoir*, 13, 1905).

FISH AND MOSQUITOES

We desire to direct attention to a very useful little pamphlet issued by the Indian Museum entitled *Indian Fish of Proved Utility on Mosquito Destroyers*,* and written by Capt. R. B. Seymour Sewell, B.A., I.M.S., and Mr. B. L. Chaudhuri, B.A., B.Sc., D. Annandale, the Superintendent of the Indian Museum, states that constant inquiries have been made as to mosquito destroying fish even since the vogue of the Barbadoes fish called "Millions."

It is obviously absurd to go to the expense of introducing these "millions" into India, where these already exist many fish which feed on mosquito larvae, as indeed any angler in India should know who has read Thomas' *Rod in India*. Eight different genera of fish are of considerable utility in mosquito destroying.

The following fish are fully described in this pamphlet—

Genus	Species	Local Name
Haplochilus	H. Panchox	Panchoke, Lal Jhagra
Do	H. Uneolatus	Piku
Lebias	L. Dispai	
Ambassis	A. Nama	
Do	A. Ranga	
Trichogaster	T. Fasciatus	Khalse, Khalas.
Badis	B. Badis	Churi, Bhedo
Anabas	A. Scandens	Koi, Kavor.
Barbus	B. Phutomo	
Nuria	N. Daurica	
	Chela agentea	Chilua

Capt. Sewell points out the danger of introducing aggressive species which will destroy the better indigenous species, as happened when the Carp (*Cyprinus carpio*) was introduced into California, where they became "a nuisance, without redeeming qualities."

Capt. Sewell gives several experiments showing the use of fish in ridding water-places from mosquito larvae.

The little book is a useful one and is sure to have a wide circulation.

THE LAHORE HEALTH OFFICER'S REPORT.

THIS is an interesting and complete report by Dr. A. G. Newell, on the city of Lahore, in the year 1911. The population of the city is over 208,000, and the annual death-rate is 32 per 1,000, but the ten years rate, 1901-10, has been

no less than 48 per mille, we find that "fevers" caused 44 per cent of the total deaths, tubercle 86, pneumonia 33, bowel-complaints 32, small-pox 28, whereas plague and cholera were only 02 and 008 respectively.

The birth-rate was 37. The need of measures to prevent or check infant mortality is emphasised by the Health Officer, and he strongly urges the need of a Lady Health Visitor. There were only 39 cases of plague and 6 cases of cholera. It appears that small-pox visits Lahore every three years, and unfortunately a neglect of re-vaccination found the people in 1911 susceptible to the infection, and he has a good deal to say about the need of vaccination and the apathy and indifference of the people to this sure and certain means of protection. We are glad to see that Dr. Newell is writing strongly on the need of preventive measures against tuberculosis.

Tuberculosis is rare among cows and buffaloes, but Dr. Newell believes that the tubercle bacillus can pass through the cow without its being affected, and he thinks that tuberculosis is spread "in India through cowdung and cowdung cakes more than through the medium of meat or milk."

The imperfect irrigation system which leads to flooding rather than irrigation is responsible for the prevalence of mosquitoes.

THE UNKNOWN DISEASE IN BURMA

WE publish in this issue an account of the somewhat extraordinary infective disease which has been discovered in Rangoon.

These cases were brought to the notice of the profession in Rangoon by Capt. A. Whitmore, I.M.S., Capt. Knapp, I.M.S., and Assistant-Surgeon C. S. Krishnaswami, and a paper on them was read at the February meeting of the Burma Branch of the British Medical Association.

The disease has many points of resemblance to glanders, and it is remarkable in how many cases the patient had been morphine injectors. The principal lesion found *post mortem* is the peculiar cheesy consolidation of the lungs. We commend the paper, which we publish in this issue to our readers, and we hope that the investigations so well begun may be continued.

THE fourth number of *Paludism* (March 1912), is somewhat disappointing, in that it is devoted to a report of the second meeting of the General Malaria Committee held at Bombay in November last, which we have already pretty fully recorded in our issue for last January.

Nevertheless the report is full of interest and value and gives very fully the discussions by the various delegates and the reference to the quinine campaign are particularly useful.

* Calcutta, 1912. Superintendent, Indian Museum, or Messrs. Thacker, Spink & Co. Price, Re. 1.

Reviews.

The March its Mechanism, Effects and Hygiene—By CORONEL P. HERR, M.D., F.R.C.S. (Ed), 1118 Calcutta Thacker, Spink & Co Price 2s 8d

THIS pamphlet is a republication of lectures given to the officers of the Lansdowne garrison and will be found of great use to military officers and to medical officers in military employ. The first 62 pages deal with the mechanism and effects of the march—and deal with the circulation of the blood, the physiological effects of exercise over-training and training for the march. Other chapters deal with march discipline, forced marches, causes of inefficiency on the march, etc. The second part consists of the hygiene of the march, the duties of the medical officer, water-supply, food, alcohol, tobacco, bathing, cleanliness.

The book is well written and is interesting reading, and we commend it to the attention of all medical officers in military employ.

"Instruments and Appliances for Operation"
—By Lt Col R. H. CANTON, 1118 Calcutta Thacker, Spink & Co Price 1/-

THIS is an admirable little book which will prove very useful to medical officers and dressers in hospitals in India. It is divided into ten sections or chapters, viz., operation room, instruments, anaesthetics, special operations, operation on the eye, dental operations, ear operations, gynæcological operations, midwifery, etc.

The notes are eminently practical and useful, and we can confidently recommend this little pamphlet to all Civil Surgeons in India. It is possible that much of the pamphlet might have been even more useful if printed on a series of sheets for hanging on the wall. In whatever shape, however, it will be found useful.

A Dictionary of Treatment—By SIR WM WHITLA, M.D., LL.D. 5th Edition, 28th thousand Cl. 8vo, pp. 1204 London, 1912 Baillière, Tindall & Cox. Price 16s.

THE fifth edition of this invaluable companion of every medical practitioner is dated Belfast, March, 1912. This wonderful book has now come of age having been 21 years in the hands of practitioners since its first publication in 1891. The last edition was soon sold out and the ceaseless change and progress in therapeutics has necessitated another edition.

An excellent feature of this edition is the very complete index.

We can confidently recommend this new edition. We have used more than one previous edition and always found it helpful. No Civil Surgeon or practitioner in India should be without Whitla's Dictionary of Treatment.

What to do in Cases of Poisoning—By WM MURFILL, M.D. Eleventh Edition London H K Lewis, 1912, pp 283 Royal 32 mo Price 3s

THIS little book has come of age this year, the first edition appeared in 1891 and the present the eleventh in 1912. It is a splendid little book, and has been appreciated by hundreds of medical men. The new edition has been thoroughly revised, many new poisons added "including the deadly veronal" as our author calls this drug. The use of veronal for suicidal purposes is enormously on the increase, and fatal cases are almost daily recorded. It has a very slight taste, and unfortunately it is not included in the Schedule of the Poisons Act of 1908. Merck gives the dose at 7 to 10 grains, but it is better to give smaller doses. Death has followed from 15 grains. The symptoms are sleep and coma, cyanosis, thirst, itching of legs and reddish violet rash or spots on the body. Urine cherry red in colour, pupils variable.

The treatment consists in emetics. Coffee and strychnine hypodermically.

What to Eat and Why—By G. CARROLL SMITH, M.D. Boston W B Saunders Company, 1911

WE have read through this book with very great pleasure and considerable profit, and we heartily recommend it to the profession in India as a sound and reliable guide in the dietetic treatment of disease. So far as we can speak from general information, the subject is one that is very little understood by the majority of practitioners and its importance is often overlooked. The author discusses only the more important diseases, but, if the general principles of dietetic treatment are understood, the doctor will not find any difficulty in applying those principles to most morbid conditions. This volume is simply and clearly written and not overburdened with a mass of minute details. It gives very concise information on the main problems likely to be encountered in treatment, and should be a great help to the practitioner in his daily work. It is a level-headed production, and the author has taken particular pains to avoid the fads and quackery ideas that seem to have become closely associated with the subject of dietetics.

The Treatment of Fractures by Mobilisation and Massage—By JAMES B. MENNELL, M.D., B.C. (Cantab.) Pages 456 Illustrations 67 Price 12s net. Messrs. Macmillan and Co, Limited, St. Martin's Street, London

THE first exponent of this method of treatment of fractures was Professor J. Lucas Championniere of Paris, who has written an introduction to this work in which he pays Dr. Menzell the compliment of saying that this work is neither a translation nor a compilation of his own writings. Dr. Menzell's work is based on a series of four hundred or more cases which he

has himself personally treated, and these practically cover the whole range of fractures.

It will by most Surgeons be granted that the results of the treatment of fractures by immobilisation are not all that can be wished, and despite the able advocacy of Mr. Arbuthnot Lane for operative treatment in these cases, it is not feasible for many reasons for this to be carried out in all or even the large majority of fractures so that this treatment by massage has a very definite sphere of usefulness. It may be written here that Dr. Menzell has stated his case for this method of treatment with conspicuous fairness.

The first few chapters are concerned with definitions, pathology, the setting of fractures, immediate and secondary results.

In the section on the setting of fractures, the author summarises the duties of the medical man mainly as follows—He must restore the fragments of the fractured bone to their original position, the most efficient means short of open operation being mobilisation and massage. The long axes of the fragments must remain parallel. Complete restoration of function should be the criterion of treatment and not perfect structural restoration. Operation should be advised whenever (1) gross deformity exists, (2) any deformity interferes with the function of the limb, (3) there is persistent deviation of axis, (4) shortening in spite of perfect use, is disadvantageous to the patient.

There is a most useful chapter on the use of the X-rays and the author's views on this point are well worthy of consideration.

He states that few X-ray examinations can be accepted as complete unless proper account has been kept of the clinical aspects of the case. This is a point that is apt to be overlooked at any rate by students when an X-ray examination has been made.

The advice as to showing patients the own radiographs is also worthy of remembrance, *i.e.*, only let them see them in exceptional circumstances and not for the satisfaction of their curiosity and then always with the interpretation of a medical man.

The chapters on how massage should be employed with the subsequent passive and active movements are very clearly written, and a practitioner who has no personal knowledge of this method of treatment should have no difficulty in following out the instructions laid down. They also contain some good explanatory photographs.

Other chapters in Part I deal with splintage and contra-indications.

Part II describes the treatment of individual fractures. The author has taken various modern standard text-books and one written in 1875 and given the treatment from these to act as a comparison with that he describes.

The book is a useful one, for not alone does it bring into prominence a treatment of which

there is comparatively little literature in English, and which is also too little employed, but it embodies the writer's experience with a fairly large number of cases.

Direct Laryngoscopy, Bronchoscopy and Oesophagoscopy—By Dr. W. BRUNINGS, translated and edited by W. G. HOWARTH, M.A., M.B., B.C. (CAMB.), F.R.C.S. (ENG.) Medium 8vo, pp. XIV+370 with 114 illustrations. Price 15s net. Messrs. Baillière, Tindall & Cox.

THIS is a translation of Brunings' work, and we all owe a debt of gratitude to Mr. Howarth for bringing this work within the reach of English surgeons.

Brunings in his work has given us the results of an experience second to none, not only in the perfecting and use of the bronchoscope, but also in instructing students and others in its use.

As a consequence of acting as instructor to the large number of surgeons who attend his clinic from all over the world he appreciates and explains all the difficulties a beginner is likely to encounter in using the instrument. Herein lies the great value of this book, no detail has been too trivial to leave out, no gaps are left for the student to fill in from his imagination. The first chapter is a detailed description of the necessary instruments and sources of electric current suitable for the purpose. He recommends a motor converter of the multostat type when the supply is from the public main, and accumulators where no public supply is available.

Simple rheostats to reduce a main supply of 220 volts are absolutely condemned as in the case of a short circuit it is possible to deliver a fatal shock to the patient through the oesophagus or bronchus.

There are careful instructions for focussing and centring the light and for discovering faults in case of its failure. A very full chapter is devoted to the important question of anaesthesia and the indications for and against general and local anaesthesia clearly set out. The advantages of painting instead of spraying with cocaine solution are demonstrated by a series of experiments and a special painting syringe is described. The author's views on the value and dangers of cocaine are worthy of note. We thoroughly endorse his advice to beginners to use local anaesthesia only, and reserve the use of general anaesthesia for children and the few cases having special indications. Brunings is an enthusiastic advocate of the inhalation of oxygen in all diseases narrowing the air passages, and states that its use, in the case of acute obstructions such as oedema of the larynx will frequently render tracheotomy unnecessary, while in most cases hurried tracheotomy can be dispensed with and the operation done deliberately. He gives full details for the administration of oxygen and contends that the unsatisfactory

results so frequently obtained are due to faults in its administration

Direct laryngoscopy is next described and the various methods of performing laryngeal operations, the most interesting of which are a series of cases in which the author restores a limp atrophic vocal cord to its normal position for phonation by the injection of paraffin

The last two chapters contain a detailed account of the technique of œsophagoscopy and bronchoscopic operations and treatment

Finally, the author has some suggestive remarks to make on endo-bronchial therapeutics especially in asthma, although he admits his personal experience of it is not great. The book is too full of detail to enable us to give more than a general idea of its contents, and we would strongly urge its perusal by all surgeons. Even those who prefer to leave the use of the instrument in the hands of a specialist will in this way gain a more comprehensive idea of its general scope and utility than was previously the case, while the specialist himself will probably discover that the bronchoscope has a much wider range of utility than he originally supposed

Medical Society.

Assam Branch B M Association

Paper read by Dr. E. Wells Witham at meeting of the Assam Branch British Medical Association, Dibrugarh, February 3rd, 1912

GENTLEMEN,

The subject I propose bringing to your notice "Tetanus following the Injection of Quinine" is of special importance to the members of this Branch

Quinine given subcutaneously having been occasionally followed by tetanus, the subject has, during recent years, been experimentally investigated by several observers

Vincent, in the *Annals of the Pasteur Institute*, 1904, expresses the opinion, that not all the cases of tetanus occurring after subcutaneous injection of quinine, could be accounted for by the want of antiseptic precautions, and he recommends that malarial patients who have badly cared for wounds which may permit the entrance of the tetanus bacillus should have a prophylactic injection of anti-tetanic serum at the same time as an injection of quinine, thus indicating his belief that quinine so administered, and under such circumstances has a favouring influence on the growth of the tetanus bacillus

McC Campbell, in the "*Journal, American Medical Association*," March, 1907, writes.—"I think without doubt that the majority of cases in which tetanus has resulted after hypodermic injections of quinine can be traced to some fault in the surgical technique or to the contamination of

the solution of quinine. Quinine possesses a corrosive action and the necrosis of the tissues resulting in some cases would undoubtedly favour infection by the bacillus of tetanus, as well as by other bacteria. nor do I think it possible for the healthy live spores of tetanus to be present in the body and to develop a severe and fatal infection on the advent of hydrochlorate of quinine"

More recently we have Semple's experiments published by the Government of India, criticisms of which have, during the last few months, appeared in the *Indian Medical Gazette*

These experiments interesting and convincing, probably familiar to you all, justify Semple's conclusion that "pure washed tetanus spores" given hypodermically to guinea-pigs and monkeys do not produce tetanus, but when quinine is injected hypodermically (in the doses used in the experiments) into a different part of the body, either the day before, the same day, or the day after spores are given, a large percentage of these animals contract tetanus

The following is taken from Semple's report. "Those who have had an extensive experience in treating malaria in tropical climates, assert that there are cases in which it is possible to save the patient by hypodermic injections when it would be impossible to do so by ordinary administration of quinine"

"It is in such cases and not as a routine measure in those who can take quinine by the stomach that hypodermic injections are justifiable. Given with the precautions which a dose of anti-tetanic serum would ensure there would be no risk of tetanus ensuing, and the patient would only have to contend with the local reaction caused by the quinine"

This observer is of opinion that tetanus spores may be harboured in the tissues of the body for months, and that in most cases where tetanus follows an injection of quinine, a latent tetanus infection pre-existed and was stimulated into activity by the injection.

It has long been noticed that fatigue, excessive variations in the daily temperature and influences which decrease the resisting powers of the body, favour the occurrence of tetanus, and the questions naturally arise, to what extent may the malarial infections in the admittedly small proportion of cases in which tetanus occurs after an injection of quinine have helped to stimulate the tetanus spores into activity, and have cases of tetanus occurred in malarial infections, treated without the administration of quinine subcutaneously?

To those of us who have the direction of the treatment of thousands of cases of fever annually, and who have freely used and ordered the use of quinine hypodermically, it becomes an imperative duty to investigate the results of our treatment and to ascertain if the conclusions arrived at in the laboratory are supported by clinical experience.

My own experience in Assam extends over a period of 20 years, the first 10 years I did not use quinine subcutaneously, the last 10 years it has been given freely hypodermically in my hospitals, and I must acknowledge the last 7 or 8 years it has been a routine treatment. I have used it without hesitation in my European practice and have had numerous injections myself.

I estimate the number of quinine injections (hypodermic) given in my practice during the last 10 years to be considerably over 50,000. The patients were of varying races and castes, and included many infants below 6 months of age.

Tetanus is rare in the Doom-Dooma District, and the few cases that have occurred in my practice during the 11 years I have lived there, have occurred almost exclusively on two of the ten gardens of which I have medical charge, whereas hypodermic injections of quinine have been of daily occurrence on all the gardens. On the most malarious garden of the group, a garden with a population of approximately 6,000, no case of tetanus has, to the best of my knowledge, occurred during the 11 years.

I can call to mind two cases both on the same garden where tetanus followed the injection of quinine.

Case I—A boy aged 14 had hypodermic injection of quinine (hydrochloride gr. v) on two successive days, developed tetanus, 9th day after first injection.

Case II—Man aged 45, one injection quinine (hydrochloride gr. v) developed pneumonia, 4th day after injection and tetanus 8th day on which day he died.

My experience will not allow me to accept Sir David Semple's conclusion that the injection of quinine as a routine measure is not justifiable, but I admit that my experience has been gained in a district singularly free from tetanus. His experiments convince me of the advisability of giving antitetanic serum prophylactically when administering quinine hypodermically to patients who at the time have badly cared for wounds, and whilst continuing to use quinine injections as a routine measure on some gardens, on others I am discontinuing it for the sake of observations and comparison.

It is possible that the experience of others who have practised in towns or in countries where tetanus is prevalent may vary widely from mine.

SPECIAL ARTICLES

I

A VISIT TO THE CINCHONA PLANTATIONS, BENGAL.

Nowadays in every tropical and subtropical country endeavours are being made to fight malaria, and as a consequence the demand for quinine has gone up all over the world, so much

so that within the last two or three months the price of quinine has increased by over 25 per cent. The importance, therefore, of the Government of Bengal cinchona plantations has been much enhanced, as it is quite possible that the Java plantations will soon be unable to supply the world's demands.

A description, therefore, of the Government of Bengal plantations as seen at a recent visit paid by the writer and the Inspector General of Civil Hospitals, Bengal, may not be without interest to our readers.

The Superintendent of Cinchona Cultivation in Bengal is Major A. T. Gage, I.M.S., the head of the Botanic Survey of India and a worthy and capable successor of the long list of distinguished botanists produced by the Indian Medical Service (see *I.M.G.*, June, p. 231).

We need not here dilate upon the history of the cinchona plant, but briefly mention its history in India for which purpose two useful pamphlets are to hand.*

It is well known that the Spanish Jesuits in Peru in the end of the 16th century became acquainted with the virtues of the cinchona trees which grew on the Andes. In the fourth decade of the 17th century the Countess of Chinchon, the wife of the Viceroy of Peru, was cured of fever by the powdered quinquina bark, and she took a supply of the bark with her when she returned to Spain in 1640. Long afterwards Linnaeus gave the name cinchona to this genus of trees.

The reckless destruction of the cinchona forests of Peru and Bolivia in the early 19th century led the Indian and Dutch Governments to appreciate the need for a supply of bark. Expeditions were sent out, the most successful being that of the veteran, Sir Clements Markham, in 1858. He was able to get his cases of living plants down to the coast only by stratagem. In 1865 an Englishman, named C. Ledger, was lucky enough to get a packet of the best seed, which was sold, its special value being unsuspected, both in India and to the Dutch Government, and this is the source of all the *Ledger* trees now in existence.

From a medicinal point of view there are only three species of cinchona worth here considering, viz.—

Cinchona succirubra, "red bark"

Cinchona officinalis, "Loxa" or "Crown bark"

Cinchona ledgeriana, "yellow bark"

Up till the 19th century the powdered bark was used in its crude state, in 1820 quinine was isolated later on the five chief alkaloids were isolated, which are, quinine, quinidine, cinchonine, cinchonidine and an amorphous

* I. A brief account of Cinchona Cultivation and Quinine manufacture in Bengal—by Major A. T. Gage, I.M.S., Bengal Secretariat Press.

II. Agricultural Ledger, No. 4, 1911 Cinchona Bark—by D. Hooper.

alkaloid (which latter can also be obtained in the form of a sulphate)

The history of the cinchona plantation in India is briefly as follows.—Dr A. Campbell, I.M.S., for long years the first Superintendent of Darjeeling and Political Officer in Sikkim, interested himself much in the introduction of the trees into Darjeeling District, but it was not till 1864 that the present Bengal plantation was well established on a flank of the Senehal Hill overlooking the Runjo and Tista Valleys, 10 miles from the Sonada Railway Station on the D-II. Railway

At first the red bark *C. succinubia* was almost exclusively cultivated, and even in 1875 there were three million plants on the plantation

At first no quinine was made, but the well known mixture of alkaloids called cinchona febrifuge was largely sold and used with great benefit at a time when quinine was still extremely expensive

It was soon found that the *C. succinubia* was deficient in quinine, but rich in the other alkaloids, whereas the *C. Ledgeriana* or yellow bark was rich in quinine, and in 1871 the Ledger plant and also the Ledger hybrid was introduced and has now largely taken the place of the *C. succinubia*

In 1888 quinine began to be manufactured at the Mungpo Factory, and 300 lbs were produced in the first year. From 1880 to 1890 the cinchona planters of Madras shipped enormous quantities of bark to Europe so that the price of quinine fell from 20 Rs per ounce in 1878 to only 12 Rs per lb in 1890. The price has up till recently been kept low by a somewhat similar (and possibly equally reckless) sale of bark from the Java plantations

In 1900, it having been evident that the Mungpo plantation was being exhausted, a new plantation was started at Munsong, not far from Kalimpong on the road to Pedong in British Bhutan. This estate consists of 9,000 acres of forest, 3,000 of which are being planted with cinchona trees

We may quote the following extracts from Major Gage's pamphlet—

"Planting Operations.—Cinchona seed is very small and extremely light and provided with a membranous expansion of wing. There are about 70,000 seeds to an ounce. The seed ripens during February and March, and is at once collected and sown in specially prepared beds. These beds are protected by pent houses, or sheds of bamboo covered with thatch, each shed being about 5 feet high in front and about 2 feet high behind. The nurseries face north, to prevent excessive evaporation from direct exposure to the sun's rays. When the seedlings are about $\frac{1}{2}$ inch high, they are transplanted to other beds, in which they are placed about 1 inch apart. Still later, when the seedlings are about 4 inches high, they are again transplanted, but this time to nursery sheds erected near the newly cleared land. By October the seedlings are nearly 1 foot high. Then the thatched roofs of the nursery sheds are removed and the seedlings exposed to the sun until the following spring

Then they are finally planted out, about 2,000 to an acre if close planting is practised, or about 1,000 to an acre if in the open planting is practised. For the first year the young plantation is kept clear by hand weeding and by sickling. From the second year onwards weeds are kept down by repeated light hoeing and hand weeding. In close planting, after three years 'thinning' is necessary. That is, every other tree is uprooted so as to afford more room to the others to grow vigorously."

The bark is not harvested till about 10 years after planting, seed is taken only from selected trees, after a sample of the bark has been chemically analysed. The bark is scraped off branches and roots of the trees selected to be uprooted and carried to the drying shed, where it is dried and then removed, and various kind of bark mixed together in accordance with the known percentage of quinine in each kind. The rough bits of bark are then pounded and broken up in the graining machine

The brown powder is then mixed with slaked lime and water and left for a couple of days till the cells are disintegrated. It is then heaped into big buckets and carried to the Extraction Factory

This is a big building 133 feet long and 70 feet broad. There are several rows of big iron cylindrical vats, lined with spirally coiled steam pipes with mechanical stirrers

Into each digester or vat is placed about 300 lbs of powdered bark, 200 gallons of water are added and about 20 per cent of caustic soda—

"Then the powdered bark is tipped in and stirring continued until the bark and the solution of caustic soda form a thin homogeneous paste. Meanwhile the batching oil that is used in the next stage of the process has been heated in a special large iron tank of over 1,200 gallons capacity sunk below the factory floor and provided with a steam coil. From this large sunk tank the hot oil is pumped into a smaller tank near the roof of the factory. From this high tank the hot oil descends by gravitation to fill the oil pipe already mentioned as running just above the digesters. When the mixture of bark powder and caustic solution has been sufficiently stirred, the tap of the oil pipe just above the digester is opened, and about 415 gallons of hot oil are run in. At the same time the steam cock is opened and steam fills the coil lining the digester. Then stirring and heating are kept up for about three and a half hours, and the temperature of the mixture in the digester rises nearly to boiling point. What takes place is that the caustic soda solution takes up all the alkaloids from the powdered bark and hands them over to the oil. Then the stirrers are stopped, steam is shut off, and the powdered bark allowed to settle down as a sludge in the bottom of the digester, while the oil is clear above. Each digester is provided with two taps, one close to the bottom and another just above the level of the bark sludge. Through the upper tap the clear oil, carrying the alkaloids with it, is run off into an iron channel that runs along the base of the row of digesters into the sunk tank from which it originally came. From this the oil is again pumped into the high tank

"From the latter the alkaloid bearing oil is run directly into a large oblong lead lined iron tank called the 'separator,' of about 1,900 gallons capacity. Dilute sulphuric acid is then added, and the mixture agitated by jets of steam blown in from pipes inside the tank. Just as the caustic soda solution handed over the alkaloids it had extracted from the powdered bark to the oil,

so the latter now gives up the alkaloids to the acid solution. After the mixture of oil and acid solution has settled, the oil now free of alkaloids is run off again into the sunk tank, where it can be heated once more for use in the digesters.

"The acid solution containing the alkaloids left in the lead lined tank is run off and conveyed to the purifying house, a separate building at a lower level."

Purification of Quinine—In the purifying house the acid liquor containing the cinchona alkaloids that has been run off from the lead lined separator tank is first poured into large cylindrical iron pots lined with lead, and having a steam coil in each. Each pot has a capacity of 75 gallons, has a spout and is mounted on a trunnion arrangement that permits of the pot being tilted gradually. Opposite each pot is a long lead lined trough 26 feet long, 4 feet 3 inches broad, and one foot deep. The hot acid liquor in a tilting pot is neutralized by the addition of caustic soda solution, and then the pot is tilted until the neutral liquor is emptied out into one of the lead lined troughs in which the crude quinine sulphate crystallizes out, forming a dirty looking greyish pulp. This crude crystallization takes about two days.

The mixture of mother liquor and crude crystals is then placed in a centrifugal separator. This is a cylindrical copper gauze basket with a strong outer casing of iron, there being a space between the basket and the casing. The gauze basket is first lined with a piece of calico, and then the liquor and crude crystals poured in. The basket has a very strong steel vertical spindle, which is connected by friction gear to a high speed engine, so that, when set a going, the basket revolves at a speed of 1,200 revolutions per minute. All the liquor is driven through the basket into the space between it and the outer casing, whence it is run off for further treatment. The greyish cake of crystals left in the basket is crude quinine sulphate, with about 10 per cent of the other alkaloids. The liquor pressed out contains cinchonine, cinchonidine, quinidine and amorphous alkaloid.

The crude quinine sulphate has now to be freed of the still remaining percentage of alkaloids mixed up with it, and has to be decolorized. About 60 lbs of the unpurified cake from the centrifuge machine are dissolved in about 120 gallons of boiling water. A precipitate is formed that settles and conveys down with it the colouring matter. The supernatant liquor containing now practically pure quinine sulphate is filtered and then run into long copper lined troughs, each about 20 feet long by 2 feet broad and 9 inches deep. In these troughs the second or final crystallization takes place.

The purified crystals with their mother liquor are again put through the centrifuge, and the white cake of pure sulphate of quinine left in the basket is then transferred to trays and placed in the drying room. The air of this room is kept in motion and slightly warm by means of a fan, that draws in air from openings covered with muslin over steam pipes. In ten days the quinine is dry. It is then sifted and transferred to the packing room, where it is carefully weighed and packed into paper lined tin boxes containing quantities from $\frac{1}{2}$ oz to 4 lbs. The boxes are soldered, and then packed in wooden cases to contain from 30 lbs to 50 lbs of quinine. The wooden cases are then sealed and are ready for despatch to the distributing office.

The distribution of cinchona preparations to all parts of India is now done by the Bengal Jail Department through the Juvenile Jail, Alipore, Calcutta, where tablets of quinine and pice packets are prepared for sale and distribution in accordance with the plans of the Sanitary Commissioner.

It is obvious that in view of the great demand for quinine for anti-malarial operations the Government of India possess in these plantations, and in that on the Nilgiri Hills very valuable properties. Arrangements have therefore been made to hold a large stock of quinine so as to be independent of commercial speculation in this valuable commodity.

A great deal of pharmacological work remains to be done before we can settle the quinine question. The relative value of the hydrochloride and the sulphate has not yet been, at all certainly, decided. The former salt can be prepared at the Mungpo Quinine Factory at a small cost for extra plant, but it is useless to go in for this expense, if the hydrochloride has no manifest advantage over the sulphate. Again there is no doubt that the cheaper preparation known as "Cinchona Febrifuge" is a very useful and effective drug in malarial fevers, but it undoubtedly has the drawback of being very unpleasant to take, and also very likely to cause nausea and vomiting.

What is needed is to appoint a special pharmacologist and chemist to thoroughly test and examine this drug. If the substance or substances which cause nausea can be eliminated, we have in this substance a cheap and reliable anti-plasmodial drug. In view of the rapidly increasing cost of quinine further investigation of these alkaloids is urgently needed. Again among some practitioners, and especially in the Mission Hospitals, the amorphous alkaloid has a good reputation. This too should be enquired into. This amorphous alkaloid is obtainable in the form of sulphate and can be made into tablets.

Write upon the Government of India the further investigation of these alkaloids. If cinchona febrifuge could be improved and freed of its nausea producing qualities a valuable anti-malarial drug will be plentifully available. The *C. succubra* trees which give a high percentage of this drug are large and still exist in considerable quantity, so that a supply of the cheaper alkaloids would be easily available. At present, (that is in its present state, and at present low prices for quinine), we cannot recommend the wide use of the febrifuge, though it is largely used at present as the main ingredient in many patent or well advertised "Fever Mixtures." If, however, the Java supply of the bark becomes limited and the price of quinine materially rises, the Government of India will still have a considerable stock of quinine available from the Munsong plantations but it may also be desirable to fall back upon the use of cinchona febrifuge and the other alkaloids of this valuable plant. The sooner a special pharmacologist and chemist is put on the investigations, the better for the success of the anti-malarial operations in India, and the sooner this is done the better.

II.

FILARIASIS AND ELEPHANTIASIS

WE have received a very valuable report on Filariasis and Elephantiasis in Fiji by Dr P H Bahi (M.B., Cantab.), which is published by Messrs Witherby & Co, London (Price 6s)*

We have no hesitation in saying that this is far and away the best account yet written of the diseases attributed to the various filariae. It is based upon work done by Dr Bahi who was sent to study these diseases in the Fiji Islands. We quote below the categorical conclusions arrived at by the author and must refer all the readers interested in the subject to the report. In each instance the statements which we quote below are fully discussed.

1 A large proportion, 27.1 per cent of Fijians have been microfilariæ in their blood.

2 This figure does not represent the aggregate liability of the Fijians to filarial infection. There are reasons for believing that, at one time or another, nearly every Fijian is the subject of filariasis. These reasons, together with the preceding (1) are (a) adult filariae are to be found in the lymphatics and other tissues without the presence in the blood of corresponding microfilariæ, (b) a large proportion of Fijians are affected with what is common with others. I regard as filarial disease, and in whom no microfilariæ can be found in the blood. That is to say, the proportion of Fijians carrying microfilariæ (27.1 per cent) added to the number of Fijians affected by filarial disease but without microfilariæ (25.4 per cent) amounts to 52.5 per cent of the entire population, (c) all Fijians, as well as foreigners for some time resident in Fiji, exhibit a well marked eosinophilia, and this in the absence of evidence of infection with intestinal or other metazoan parasites, (d) patients with microfilariæ in their blood have lost, while under observation, their microfilariæ.

3 In the present state of our knowledge it cannot be definitely stated whether the Fijian filaria is a new species, or whether it is *Filaria bancrofti* with the habit of its microfilariæ, as regards periodicity, modified by local circumstances.

(a) In favour of its being a distinct species are the following. Its larval form (microfilaria) exhibits in the blood no periodicity, i.e., contrary to what happens elsewhere in the case of *Filaria bancrofti*, it occurs in equal abundance in the blood at all hours of the day or night. While capable of development in *Culex fatigans*, the favourite intermediary of *Filaria bancrofti*, this mosquito is not nearly so efficient an intermediary in Fiji as it is in other countries, or as is *Stegomyia pseudoscutellaris*, the common mosquito in this group of Islands. (b) In favour of the Fijian filaria being identical with *Filaria bancrofti* are the following. The Fijian microfilaria is morphologically identical with *Microfilaria bancrofti*. The parental form of the Fijian microfilaria, as far as can be ascertained at present, is identical with *Filaria bancrofti*. Both nematodes live in the same tissues and are associated with the same diseases. *Stegomyia pseudoscutellaris* is an efficient intermediary for *Filaria bancrofti*. As regards adaptation to intermediary hosts, there is, therefore, a corresponding capacity.

4 Assuming that the Fijian filaria is *Filaria bancrofti*, it may be that the absence of periodicity in the former is a partial adaptation to, and imposed on it by, the habits of its usual intermediary host in Fiji, viz. *Stegomyia pseudoscutellaris*, a mosquito which feeds by day only.

5 The absence of periodicity in the Fijian filaria does not depend on any racial peculiarity in the human

host, for (a) If a native of India or of the Solomon Islands harbouring microfilaria bancrofti comes to reside in Fiji, his Microfilaria retain their habits of nocturnal periodicity, (b) When such a stranger acquires filarial infection in Fiji, the corresponding microfilaria exhibit no such nocturnal periodicity, but in this respect comport themselves in the same way as do the microfilaria of the native Fijian.

6 The principal pathological expression of filarial infection is the same in Fiji as elsewhere, viz., elephantiasis.

7 The lower extremities and scrotum are the parts of the body most frequently affected.

8 In comparison with the natives of China, India and the West Indies, the natives of Fiji, and probably of other South Pacific Islands, are peculiarly liable to elephantiasis of the upper extremities.

9 On the other hand, they seem to be less liable to chyluria, lympho serotum, varicose groin glands, and other forms of lymphatic varix depending on filarial obstruction of the thoracic duct above the points of entrance of the chyle vessels.

10 The explanation of these possible peculiarities in the Fijian disease is not apparent.

11 In many cases adult filariae occur in large numbers in the tissues, especially in lymphatic glands and vessels, but also in other organs, as the epididymis, testis and tunica vaginalis.

12 In the latter circumstance may lie a contributory cause of the infertility of the Fijian as a whole.

13 In the situations mentioned the adult filariae may die, and may become encysted.

14 The adult filaria is not an unusual cause of abscess, of hydrocele, of enlarged testes and of thickening of lymphatic vessels, and of fugitive swellings resembling Calabar swellings.

15 Whether alive or encysted, the adult filariae are the direct cause of fibrosis and blocking of glands and lymphatics.

16 Eosinophile cells are present in large numbers around both living and encysted filariae.

17 Calcified filariae have been found in the interior, and blocking the vasa efferentia of the epididymis.

18 Microfilaria emitted by the parent worm may not reach the general circulation, perishing in the gland or organ in which the worm is lying.

19 Periodical discharges of microfilaria may be a factor in the production of lymphangitis, orchitis and funiculitis.

20 After such inflammatory attacks the parent worm may perish.

21 Lymph from such inflammatory foci may be sterile, or it may be the seat of bacterial invasions.

22 Lymph from inflamed elephantoid tissue is usually sterile.

23 The precise mechanism of the production of elephantiasis has yet to be determined, but that the filaria is the principal factor is hardly open to doubt.

24 Certain parasiticide drugs in medicinal doses have no manifest influence on the circulating microfilaria.

25 The absence of microfilaria from the blood in the case of undoubted infection with living filariae requires explanation. A similar anomaly occurs in other filarial infections in man, e.g., in *Filaria loa* and in *Filaria imitator*.

26 Surgical and medical treatment of filarial disease is unsatisfactory.

27 Mosquito destruction, carried out on the same lines as for malaria and yellow fever is the only means likely to prove of service in eradicating or seriously mitigating this important helminthiasis.

We would especially refer our readers to pages 32 and 33 of Dr Bahi's report, where he repeats the experiments of Fulleborn and shows that the filariae enter through the pores of the skin and can be watched by a hand lens as they

disappear "with lightning like rapidity" through the skin, much in the same way as the ankylostome larvae enter the skin. They bore their own way through the skin and do not enter by the puncture made by the mosquito.

Dr. Bahr ably handles the various well-known difficulties as to the problem periodicity and of the fact of effects certainly filarial, where no filarial can be found in the blood. It is handling of the question as to the exact mechanism of the production of elephantiasis is very able and convincing, but that even in this valuable treatise the question is not yet completely settled, is shown by the following suggestions for further work.

The book is very thoroughly illustrated by numerous charts, coloured and monochrome plates. It is a splendid piece of work and we strongly commend this report to our readers.

The following suggestions for further investigations on filariasis in the islands of the Pacific have occurred to the author.

(1) "If *Filaria bancrofti* and the filaria found in Fiji be really the same species, can the periodicity of the imported *Microfilaria bancrofti* be disturbed by long residence in this island?"

(2) "Does the periodic variety of *Filaria bancrofti* normally occur in any of the islands of the Pacific, and if so, what are the chief mosquito intermediaries in these islands?"

(3) "The explanation of the apparent relative inefficiency of *Culex fatigans* as an intermediary host in Fiji."

(4) "The exact pathology of filarial lymphangitis."

(5) "More detailed research on the pathology of elephantiasis."

(6) "Determination of the life span of the microfilaria by injection of human blood containing the parasites into a monkey, or a filaria free man."

(7) "The stages of development of *Filaria bancrofti* following its entrance into a human host, and the route it traverses from the skin."

(8) "The explanation of the supposed cessation of attacks of lymphangitis on leaving the endemic area."

(9) "The determination of the respective geographical ranges of *Stegomyia pseudoscutellaris* and the non-periodic filaria."

(10) "The determination of the microfilaria, the adenitis and elephantiasis rates of all the Pacific Islands."

(11) "The determination of the cause or causes of filarial periodicity."

(12) "How comes it about that, in those places where reinfection of individuals must be constantly going on, cases of extreme degrees of hyperinfection are not more frequent?"

(13) "In explanation of the absence of microfilariae in the blood of persons manifestly filarized, my observations suggest the following hypothesis. The majority of the larval filariae placed on the skin find their way into lymphatic vessels, and so into the glands, where, though arrested, they continue to develop and attain maturity. In consequence of the fibrosis they determine or other cause, these filariae fail to get their young into the circulation. Perhaps, as sometimes happens, an anastomosis of lymphatic channels is established. I suggest that, as a rule, it is only, or especially, those filariae which attain and live in lymphatic channels unguarded by glands, that succeed in getting their young into the blood. To support this hypothesis, I suggest careful search in the type of lymphatic vessel referred to, especially the thoracic duct."

Correspondence

THE NEED FOR CONFERENCES AMONG MEDICAL OFFICERS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—May I, as a Civil Surgeon with over fourteen years' service, in charge of a district which is unfortunately somewhat isolated, make a suggestion which may meet with your approval, and that of the members of our Service similarly situated?

Our work as Civil Surgeons, as is well known, is primarily professional, but the administrative element demands from us almost as high a standard of efficiency and responsibility as in the non-professional and executive Services. In those Services the system of Conferences has been established with general approval, the object being that, by the interchange of ideas, officers who are isolated may be afforded opportunities of keeping in touch with administrative progress.

If this system is beneficial to the non-professional Services, how much more must it be applicable to our Service where there would be the additional advantage of an interchange of professional ideas? Such Conferences, if established, would to a certain extent supply for us the place of the local meetings of the Medical Societies at Home. As often as not, when four or five Indian Medical Service Officers come together, one of them has recently returned from Home, with the latest methods at his finger ends. Would not such an Officer be an invaluable addition to each such Conference?

As to details the Conferences could be worked out on the same plan as the Police Conferences of the old Bengal Province, the main features of which were (a) Fixed and accessible centres, (b) A limited number of Officers attending, (c) The Senior Officer to preside, (d) Pre-arranged agenda, (e) Duration one or two days, (f) An allotment of travelling allowance for the purpose, (g) Report of the Conference to be submitted to the I & G Civil Hospitals, who would of course have control of the organization of each Conference.

I have frequently discussed the subject with brother Officers of the Indian Medical Service, and think the general feeling is that there is need for the establishment of such Conferences.

CHAPRA, } Yours, etc,
12th May 1912 } T. H. DELANY, M.D., F.R.C.S.I.,
MAJOR, I.M.S.

THE TUBERCULIN METHOD OF TREATMENT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—You will notice that I have resigned my connection with the E. I. Ry. Co. I have been studying Dr. Camac Wilkinson's intensive Tuberculin method for six months and now work in co-operation with him.

I practised Wright's System for a time in India, but with somewhat unsatisfactory results. Patients improved, halted, vacillated, relapsed. Some have since died. The minimal dose system every 10 days does set up a chronic state of anaphylaxis and results are not permanent especially in pulmonary tuberculosis.

I see 200 patients a week at the Kennington Road Dispensary, and the Robert Jones of Liverpool Orthopaedic Home in Clapham, and I have been so struck with the value of the intensive method that I have taken up its practice as a permanent work.

The new Govt. Tuberculosis Commission have been enquiring into it, and I have reason to believe that they will recommend its well adoption by the nation as the most hopeful and feasible solution of the great problem amongst the poor and the great majority of these are Sanatorium men.

You have your problem to face in India also, and I should like to think that this system which is both cheap and effective will be widely studied and utilized by your Service and the Medical Public. Twenty years ago it was swept away in a flood of condemnation. It failed then as it must fail again, if again it is put into the hands of untutored men, given in unwise doses to ill-selected cases, and recklessly pushed in cases of mixed infection.

If your men on furlough will come to 263, Kennington Road, S.W., they will be given every opportunity of examining cases, studying charts, principles of dosage, and the thousand and one pitfalls for the inexperienced. Treherne has been so trained and can train others in his turn.

The dispensary is open four days a week, Dr. Camac Wilkinson taking his patients on Tuesdays and Fridays, I mine on Mondays and Thursdays, and each day clinical lectures and demonstrations are given to graduates.

I should be glad also to demonstrate the work on Surgical Tuberculosis if any of your men care to see this side of the new movement

Yours, etc

WHITE ROBERTSON

LONDON

[Our readers will remember Dr. White Robertson's valuable paper (*I M G* May 1911, p. 161), read at the Asiatic Society of Bengal—and we are sure that Medical Officers at Home on leave or study leave will do well if they look up Dr. Robertson, at 263, Kensington Road, S.W., London—*I M G*]

TREATMENT OF TRACHOMA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to Lieut Colonel Smith's letter on 'The Treatment of Trachoma' in the March issue of your journal, will you permit me to suggest that surgeons who are interested in this subject should make careful and detailed notes of each case they submit to either form of treatment entering fresh details day by day and farther that they should from time to time carefully review and analyse the results so obtained. Then deductions will then have far more value, and will carry more conviction to scientific minds than any number of general statements, even when based on an experience of many hundreds of cases.

Yours etc

R. H. FLETCHER

Lieut. Col., *I M S*

MADRAS,
24th May 1912

HASCHISCH

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The article in the *Therapeutic Gazette* (November 1910), to which the writer Dr. M. V. Ball, refers in the May number of the *Indian Medical Gazette* is entitled 'The Effects of Haschisch not due to Cannabis Sativa'. In this article Dr. Ball endeavors to prove that the deliriums, manias and other symptoms noted from time immemorial as accompanying the use of this drug are due to stronger drugs mixed with Indian hemp. He regards hyoscyamine, opium and datura among others as the probable cause of the intoxicating effects. Anyone living in India acquainted with the legal restrictions under which Indian hemp is sold, both wholesale and retail, will understand that large quantities of these drugs are purchased and consumed in a pure state. The three forms of Indian hemp are well known. *Mhang* or *siddhi* consists of the dried leaves, *ganja* the matted flower herbs, and *charas* the resinous oxidation. The two former are used largely in Bengal while the *charas* is smoked with tobacco in Northern India. Many of the consumers are poor and could not afford opium in addition to the hemp, but employ it as a substitute for the poppy.

With regard to the composition of these drugs, I have examined numerous samples from all over India, and they contain an active resin or oleo resin in varying proportions. *Charas* contains about 40 per cent of this extract, *ganja* about 20 per cent, and *mhang* 10 per cent. The active principle present in these extracts is an oil called cannabinol. This was discovered by Wood, Spivey and Hunter in 1896, and has been the subject of several physiological investigations by Prof. C. R. Marshall.

The haschisch of Egypt has lately been examined by Mr. A. Lucas of the Khedivial Survey, Cairo, and he concludes that it is practically identical in properties and composition with the *charas* of Northern India. It is used in Egypt in three different ways, and may be smoked, drunk or eaten. As smoked, the drug is generally mixed with tobacco and consumed either in cigarettes or in a pipe. Occasionally it is smoked alone, and at times with the addition of musk, cloves or rose leaves. Sometimes even more potent drugs, such as opium, datura and *nuxvomica* are added, the use of more powerful agents is confined to excessive consumers to whom the simple drug has ceased to give the required degree of exhilaration or stupefaction. In low class cafes, where haschisch smoking is carried on, in each pipe a few grains of the drug valued at 5 cents is placed on charcoal, and this is passed round to eight consumers, each of whom pays 2 cents for a long pull. For drinking purposes the haschisch is powdered and infused in cold water to form a turbid drink. For eating purposes the drug is prepared in a great variety of ways, but is chiefly made into omelettes or sweetmeats mixed with sugar, honey, molasses, oil, butter, together with aromatic spices.

The drug acts for the nervous system, but its effects vary with individuals, differing according to the dose and the idiosyncrasy of the person. Generally the first effect of a small dose is to produce increase of appetite and cheerfulness. Larger doses produce hallucinations, delirium, sleep, and

sometimes cataplexy. Errors of perception as to time and place are a conspicuous characteristic of the effects on the mind. Death from acute poisoning is extremely rare, and recovery has occurred after very large doses. The continued use sometimes leads to mania and dementia. Its habitual use is detrimental but it is said not to cause the same disturbance of nutrition as opium. A large number of cases of madness admitted to the Cairo Lunatic Asylum are attributed to hemp drugs, but the proportion within recent years, on account of prohibitive legislation, is not so high as formerly.

Many of the above effects have been obtained by Prof. Marshall with the administration of pure cannabinol which proves that *Cannabis indica* has sufficiently intoxicating influence on the human system, without recourse to poison or admixtures.

INDIAN MUSEUM,

CALCUTTA,

21st May 1912

D. HOOPER

THE PREVENTION OF GUINEA WORM DISEASE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the "Gazette" of April there appear, under the above heading, some criticisms on suggestions made by Dr. Leiper for the eradication of guinea worms from wells. It is not my intention to undertake the entirely unnecessary task of intervening between Dr. Leiper and his critics, but in the interests of Indian hygiene it seems very desirable that there should be no delay in pointing out where the annotation is in error. Dr. Leiper's article is headed "A Method for dealing with town wells infected with guinea worm" (The italics are mine). Consequently to say, as does the annotation, "but fancy such a suggestion for dealing with the village wells, say of the Punjab" (again the italics are mine) is beside the point. To attempt any such procedure at present would certainly be very unwise, but then it has never been suggested. What Dr. Leiper does in effect propose, or so I understand the position is somewhat as follows: "You have in India certain town wells which are infected with guinea worm, and you have asked me for advice as to destroying the infection without closing the wells. I have found that in England I can kill *Cyclops* and consequently the contained guinea worm larvae, by raising, fairly suddenly, the temperature of the surrounding water by 20° C. I suggest that you try this idea in India, and that to make matters more certain, you raise the temperature of the water by 50° C. In order to save you the trouble of doing so, I have had worked out certain figures which will guide you in the amount of coal required to produce a sufficient quantity of steam and again of the amount of steam which must be run into the water to raise its temperature to the required extent." It will probably be generally admitted that it is at least premature to condemn the proposal as impracticable. On the contrary, under the conditions which Dr. Leiper postulates, it has every appearance of being cheap and practicable, and its efficacy seems so reasonably to be expected that it is to be sincerely hoped that it will be tested under the conditions proposed.

BIRMINGHAM,

BENGAL

Yours etc,

CLAYTON LANL

INTESTINAL PARASITES IN LOWER BURMA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—To those of your readers who have perused the articles on the subject of intestinal parasites recently published in the *Indian Medical Gazette*, the following note on the extent of the prevalence of intestinal parasites in Lower Burma may not be devoid of interest.

During 1911 the Medical Staff of the Insein Jail Hospital examined the faeces of 1,000 consecutive new admissions to jail. Those examined were all adult males, living in the Delta of the Irrawaddy. Practically all were hold workers, a very small proportion were inhabitants of towns—

971 were Burmans
15 were Indians
11 were Chinamen

A particle of faeces, sufficient when spread on a cover glass, to cover an area of the size of the thumbnail was examined and the following results were got—

Ova of <i>Ascaris lumbricoides</i> alone	195
" <i>Trichocephalus dispar</i> alone	95
" <i>Anchlostomum diodenale</i> alone	10
" " and <i>ascaris</i>	18
" " <i>ascaris</i> and <i>trichocephalus</i>	5
" " and <i>trichocephalus</i>	3
" <i>Ascaris</i> and <i>trichocephalus</i>	51
" <i>Oxyuris vermicularis</i>	2
Segments of <i>Taenia solium</i>	1

TOTAL 410

Even this cursory examination therefore showed that 6.5 per cent of these people harboured anchylostomum duodenale.

To obtain more accurate figures we re-examined 200 of the original 1,000 cases. This time we prepared three slides each day for three consecutive days, and by this means we found anchylostomum ova in 13 per cent instead of only 6.5 per cent.

So far as I could see, the presence of anchylostomum duodenale in the majority of cases did not seem to affect adversely the health of the patient very much.

I examined the hemoglobin content of the blood roughly, using Tallquist's hemoglobinometer in 45 cases harbouring anchylostomum ova.

The result was as follows—

Hemoglobin	100%	5 cases
"	90%	14 "
"	80%	12 "
"	70%	9 "
"	60%	5 "

Some apology is necessary for encroaching on your valuable space to publish these figures, but I have noted that while in your columns the extent of anchylostomum infection has been gauged with regard to other Indian provinces, and also with regard to the Malay States and other tropical countries, nothing has been said of Burma and these figures suffice to show that Burma in this respect does not differ much from its neighbouring countries.

INSKIN, BURMA, }
25th April 1912 }

Yours,
A S LESLIE
CAPT, I M S

A NOTE ON PLATYCNEVIA OF THE TIBIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the course of examining the tibia of a case of homicide it struck me that it might be worth while to measure the Platycnevnia, with the following results—

Transverse diameter	10 centimetres
Antero posterior diameter	3 "
This gives a platycnevnic index	63.3 "

Manouvrier states that the platycnevnic index among modern Parisians varies between 70 and 80 giving an average of 75, or, in other words, the transverse diameter is to the antero posterior diameter as 3 is to 4.

In the case under measurement the ratio is more nearly as 3 is to 5.

If an investigation into platycnevnia were carried out in the various anatomical schools in India useful data might be obtained, possibly confirmatory of Manouvrier's views that platycnevnia is more common than is supposed, is not a reversion to a primitive anthropoid type, but is due rather to the inverting action of the Tibialis posterior—an action which must be well marked among the Indian peoples who walk much.

Yours, etc,
HODGKINSON LACK,
CAPT, I M S

'VITAL STATISTICS'

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Major Milne's article in the May number of *Indian Medical Gazette* is calculated to give the impression that the Sanitary Officers in this country accept the figures collected by ignorant village chowkidars as accurate vital statistics comparable to the Registrar General's returns. Both in England and abroad it is still believed that one and a half million people in Bengal alone, die annually of malarial fever. That this belief should continue to exist is due to the fact that the results of the many investigations which have been carried out into the accuracy of vital statistics have not been published in such a way as to reach the general public.

In Bengal several special investigations have been carried out of late years. In 1904 Major Leonard Rogers enquired into 1,104 cases reported as 'fever' deaths and gave 318 as due to malarial fevers, acute and chronic, including Kali Azar. In 1906 two Assistant Surgeons made a special enquiry into 4,559 fever cases in Burdwan, and they class 2,500 as due to malaria directly or indirectly, but they include under malaria all cases not obviously due to some other disease. In 1908 Capt Stewart and Proctor verified by enquiry 800 cases and put down 19.6 per cent due to acute malaria and 16.5 per cent to chronic malaria (Drainage Committee Report Bengal, 1908).

These figures show that roughly one third of the cases reported as 'fever' are due directly or indirectly to malaria. My own work leads me to the belief that the one third figures recorded by these observers is still a great deal too high. The infantile mortality in Bengal is appalling, 275 infants out of 1,000 born, die within one year, and another 50 before the 5th year. Practically all are returned as deaths from 'fever'. Marasmus due to immaturity of mothers is partly responsible. It is quite common for a girl to have her first child in her 13th year. Tetanus neonatorum causes off a number, due to the practice of rubbing the severed umbilical cord with earth. Bowel disease kills many of the weakly ones.

Though it is in the first few years of life that malaria is a really fatal disease, I think the greater part of infantile mortality is wrongly reported.

Every rise in the cholera curve causes a corresponding rise in the fever curve. At the commencement of every cholera outbreak fatal cases are given in as fever. When cholera can no longer be concealed, then they are correctly reported.

Phthisis and pneumonia are very common, especially the former and I find that the curve of fever deaths varies in close correlation with the curve of mean December temperature.

Dysentery is very fatal. For some extraordinary reason these cases in Orissa and Chota Nagpur are correctly reported. In Bengal they are returned as fever.

I append tables showing an analysis of fever deaths by my assistant and by the Health Officer of the Cossipore Clutpore Municipality compiled after personal enquiry and examination directly after death—

FOUND TO BE DUE TO

No. of reputed fever deaths enquired into		Malaria	Enteric fever	Fever of doubtful nature	Measle	Phthisis	Puerperal fever and septicæmia	Kala Azar	Cholera	Dysentery	Pneumonia	Meningitis	Other causes untraceable, &c.	Percentage due to malaria
Dum Dum Thana														
1911	195	71	30	14	3	5	5	6	7	25	11	4	13	36.41
Cossipore Clatpore Municipality														
1910	562	72	50	13	19	37			6	35	37		112	19.88
1911	415	67	62	15	3	40			2	33	17		176	16.14

Major Milne writes that the object of his article is to urge Civil Surgeons to compile some better statistics. I would be very glad to get some reliable information on the following points—

1. The seasonal variation of malaria as shown by a monthly curve of new cases attending dispensaries.

2. What is the cause of death in acute malaria? Are apælectic and cholæric forms seen? Does black water fever occur? Do deaths occur from chronic malaria, except amongst the starved?

I cannot think that the Sanitary "expert" to whom Major Milne appeared had ever seriously studied the problem. I can endorse all Major Milne's findings and believe that though malaria is a prolific source of sickness and diminished fertility the mortality attributed to the disease is little short of absurd.

A. B. FRAY, M.D., LOND., D.T.M. AND HY. (CAMB.),
MAJOR, I.M.S.,

Dy San'y Commr., Malaria Research in Bengal
June 5th, 1912

DEATH FROM ROUND WORMS IN THE THROAT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following case, being unusual, will, I hope, find space in your highly esteemed journal.

Gows Mugutsnb, a Mahomedan male child of 4 years, was admitted to this Hospital on the 3rd April 1912, for harelip on account of which its general health was not at all good. It was nevertheless in a fairly robust condition. The day after its admission Captain J. L. Lunham, the Civil Surgeon, Belgaum, performed the operation for harelip. The child was seen now and then up to 10 P.M., and was not in any way ill-disposed and was found asleep with its mother at night. Suddenly at 1 A.M., on the very night according to the mother's statement the child grew very restless and was struggling for breath and tossing its limbs about. So the Sub Assistant Surgeon on duty was sent for and on his arrival he found the child dead. The cause of death of such a fairly healthy looking child without any heart or lung trouble was a curiosity until when the child was having its last bath before the burial a bundle of living round worms was detected in the throat. The child evidently died of spasm of the glottis due to entry of the round worms into the larynx, as it was too old to be smothered in the bed and was not suffering from any heart or lung disease, had taken chloroform well, and was alright after the operation.

I am very much obliged to Captain J. L. Lunham, I.M.S., the Civil Surgeon, Belgaum, for kindly allowing me to report this case. The child passed no worms in the stools after the castor oil on the night before the operation, and an enemæ in the morning and also none in one or two vomitings after the operation, and so then presence was unfortunately not suspected.

Yours truly,

CIVIL HOSPITAL,
BELGAUM
19th April 1912

S. C. SHRIKHANDE
SUB ASSISTANT SURGEON,
Civil Hospital, Belgaum

THERAPEUTIC NOTICES

DURING the next few days there will be published an important treatise in four volumes entitled "A SYSTEM OF TREATMENT."

The Editors, Arthur Latham, M.D., Physician to St. George's Hospital, and T. Crisp English, F.R.C.S., Senior Assistant Surgeon to St. George's Hospital, have received the assistance of two hundred leading Physicians and Surgeons, who have written articles on subjects with which they are closely identified. It is confidently believed that the matter is fully up to date and that it will be found a great advantage to be able to procure all four volumes at a time.

The five hundred illustrations are largely original, and there are over five thousand pages.

A prospectus will be sent to any one interested by the Publishers J and A Churchill, 7, Great Marlborough Street, W.

MESSRS W. B. SAUNDERS CO. announce the publications in two monthly parts of verbatim stenographic reports of the famous clinical talks of Dr. John B. Murphy at Mercy Hospital, Chicago, which are held twice a week at that clinic. We have received the first part.

THE PROPRIETORS of IZAL call our attention to a paper in *The Practitioner* on the value of Izal as a very efficient germicide in enteric and coli infection cases.

MESSRS BAILLIÈRE, TINDALL & CO. announce that they are preparing the following works for immediate publication: "Foods their Origin, Composition and Manufacture" by William Tibbles, LL.D., M.D., Medical Officer of Health, Melton Mowbray; "Prescribers' Formulae and Index of Pharmacy" by Thomas P. Beddoes, M.B. F.R.C.S. Surgeon, London Skin Hospital and Westminster General Dispensary; "A new work on 'Systematic Case Taking,' by H. L. McKisack, M.D., R.N.I., Physician, Royal Victoria Hospital, Belfast; "A third edition of 'Anæsthetics' by J. Blumfeld, M.D., Senior Anæsthetist, St. George's Hospital; and a second edition of 'Syphilology and Venereal Disease' by O. F. Marshall, M.D., F.R.C.S., Surgeon to the British Skin Hospital, etc.

SELF HELP IN PHOTOGRAPHY

UNDER the above title a fascinating little booklet has just been issued by BURROUGHS, WELLCOME & CO. containing much useful information on the art and even upon the science of the camera. The folly of doing one's photography vicariously is insisted upon and the simple and satisfactory methods of development, etc., which have been worked out by means of 'Tabloid' Photographic Chemicals are graphically described. The tale of the tank and all that it stands for is told once more and told in a way which convinces the reader that not by observation only, but by calculation also he may attain to well developed negatives. The problem of exposure, always a knotty one, is laid bare and helps and hints on printing out paper, toning, gristly and bromide prints, getting warm tones by development and many other matters are scattered through the well illustrated pages.

ESCOLENT POWDER AND SOAP

WE have received samples of powder and soap prepared by the Escolent Compounds Ltd., Elthorne Road, London, N. The B.M.J., dated 21st January 1911, has highly praised these preparations, and we have personally found both the soap and the powder very satisfactory. They are strongly recommended for use in various skin affections.

NESTLE'S MILK FOR TOURING OFFICERS

EVERY one knows the danger of raw milk in India, and wise medical men prefer to use tinned milk or to do without it when on tour in India. All of us must have wished for small tins which will suffice for one or two cups of tea and will avoid having to open half use and throw away big tins. Major T. H. Delany, I.M.S., Civil Surgeon of Chapra, has put himself in communication with Messrs. Nestlé & Co., the well known proprietors of the best tinned milk and on his representation that him has put on the market tins of MILK, COFFEE AND MILK, COCOA AND MILK CHOCOLATE AND MILK, AND CONDENSED MILK in neat small tins, costing only a couple of annas which can be opened, used and thrown away.

NESTLE'S MILK FOOD for infants and invalids can also be obtained in very small tins and it should prove most useful to mothers for use of children in railway and other journeys. The 6oz. tins of IDEAL sterilised milk cannot be better, and we would recommend the him to prepare and put on the market small tins of FRESH STERILISED MILK. Messrs. Meyer, Soobco & Co., 4, Pollock Street, Calcutta are the agents. We strongly recommend these small tins to our readers.

OXYGEN

MECHANICALLY abstracted from PURIFIED LIQUID AIR. The Lunde British Refrigeration Co., Ltd., have just completed large new works at 138, Ballinghatta Road (Entally P.O.), Calcutta, for the mechanical manufacture of oxygen from purified liquid air. Oxygen produced by this method is very pure—a purity of 99 per cent being easily obtained.

Hitherto the high price of imported oxygen gas has almost prohibited its use by the Indian Medical profession. The price for imported gas ranged from Re 1 to Re 14 per cubic foot in 40 and 20 cubic feet cylinders. The Lunde Company now supply it from 2 annas to 4 annas per cubic foot in 100 c ft 40 c ft and 20 c ft cylinders. This is indeed a material decrease in price and must surely tend to stimulate the demand for oxygen for all medical purposes.

Oxygen is largely used industrially for welding and metal cutting, but it is in the medical uses of oxygen that we are particularly interested.

Oxygen is also extensively prescribed for the treatment of wounds and sores and for many maladies not connected with the respiratory organs.

Oxygen is so generally recognized as valuable for medical purposes and for resuscitation in cases of "gassing," drowning, etc., that with a view to meeting the convenience of the medical profession the Lunde Company have made arrangements to supply oxygen for medical purposes at any hour of the day or night. The Company also stock at their new works complete inhaling appliances and all fittings necessary for administering the gas.

COLONEL PATRICK HEHIR, of the Bengal Medical Service, whose promotion to that rank took place from 26th March in succession to Colonel D French Mullen, is the first officer of the I M S, who had previously served in the Sub medical Department, to attain to the administrative grade of the service. That a man who has been able, by his own exertions, to raise himself from a subordinate to a superior service, must be the possessor of talent and industry beyond his fellows, is obvious. But those who have been successful in thus entering the I M S some thirty or more years, as in the case of Colonel Hehir, usually gained their commissions at an age

somewhat more advanced than their contemporaries in the service, and most of them have retired from the service before their turn for promotion had come round. Two only, before Colonel Helmh, had reached the rank of Brigade Surgeon, C E Raddock, who was appointed a Civil Sub-assistant Surgeon in Bengal on 19th June 1850 and entered the Bengal service as Assistant Surgeon on 29th January 1857, retiring as Brigade Surgeon on 6th August 1887, and James Keess who was appointed Assistant Apothecary in Madras on 11th August 1848, entered the Madras Service as Assistant Surgeon on 4th August 1856, and retired as Brigade Surgeon on 1th January 1897 having filled the post of Principal of the Madras Medical College for several years. Colonel Helmh is also well known as an author chiefly of works on sanitation his last works *The Prevention of Disease and Inefficiency in Indian Frontier Warfare* and *The March* having only been recently published.

MEDALS—Abor Expedition.—It is notified for general information that His Majesty the King Emperor has been graciously pleased to approve of the grant of the India General Service medal with clasp to the troops employed on the Abor Expedition. Details regarding the places and dates to be taken as marking the limits of active operations will be published later.

ARRIVAL and Departure Reports—Officers—India Army. Order No 180 of 1910 is cancelled and the following substituted.

2. The attention of officers is called to the orders contained in paragraph 159 Army Regulations, India, Volume II regarding the reports to be made on arrival at and departure from, all military stations.

3. In Simla, books will be kept at Army Headquarters—in the entrance hall on the first floor of the lower building (Adjutant General's Branch). Officers are expected to enter their names and addresses in these books on arrival in, and departure from, the station.

4. Paragraph 3 will have effect from the 15th June 1912, from which date the Arrival and Departure Report Books will be withdrawn from the United Service Institution.

5. Officers Commanding Units visiting Simla should personally report themselves to the Adjutant General at his office.

"MEDICAL Branch, Army Headquarters.—The Government of India have decided that the designations of officers of the Medical Branch be altered as follows—

"Principal Medical Officer, His Majesty's Forces in India" to become "Director, Medical Services, Army Headquarters, India."

"Deputy Principal Medical Officer, His Majesty's Forces in India," to become "Deputy Director, Medical Services, Army Headquarters, India."

"Secretary, Indian Medical Service," to become "Assistant Director, Medical Service (Indian Service)."

"Secretary Royal Army Medical Corps" to become "Assistant Director, Medical Services (British Service)."

"Sanitary Officer" to become "Assistant Director, Medical Services (Sanitary)."

MAJOR S A HARRIS, I.M.S., Deputy Sanitary Commissioner, first circle, to officiate as Sanitary Commissioner, United Provinces, *vice* Major J C Robertson, I.M.S.

LIEUTENANT COLONEL J M CRAWFORD, I.M.S., Civil Surgeon second class to officiate as Civil Surgeon, first class, from the 3rd April 1912, *vice* Lieutenant Colonel G H Baker, I.M.S., on leave.

CAPTAIN W D WRIGHT, I.M.S., whose services have been temporarily placed at the disposal of this Government by the Government of India, to be employed on plague duty in the Ghazipur district, *vice* Captain A N Dickson, I.M.S., reverted to military employ.

CIVIL ASSISTANT SURGEON SARUP NARAYAN MATHUR, attached to the sadri dispensary, Sitapur, to hold civil medical charge of the district, in addition to his own duties, as a temporary measure, *vice* Major E J Morgan, I.M.S., granted leave.

CIVIL ASSISTANT SURGEON KHARAI BAHADUR SINGH KIRKI, attached to the sadri dispensary, Rae Bareilly, to hold civil medical charge of the district, in addition to his own duties, as a temporary measure, *vice* Major J N Walker, I.M.S., transferred.

MAJOR E S PECK, I.M.S., made over charge of Jullundur Jail to Assistant Surgeon Diwan Ali, Khau Sahab, on 21st April.

CAPTAIN A E GRICEWOOD, I.M.S., was granted six weeks' leave and his services placed at the disposal of the Central Provinces. The leave was soon after cancelled.

CAPTAIN HALILAG, I.M.S., was posted to Murice on 7th April. Captain J E G Swan to Dalhousie on 10th April, and Lieutenant Colonel S Browning Smith took over the duties of Chief Malania Officer from Lieutenant Colonel Adie gone on leave on 12th April.

THE services of Captain A Cameron, M.B. I.M.S., and Captain H C Buckley M.D., F.R.C.S.E., I.M.S., Plague Medical Officers in the Punjab are replaced at the disposal of the Government of India, Department of Education, with effect from the date on which they may relinquish charge of their duties.

PRIVILEGE leave for one month, under Article 260 of the Civil Service Regulations, is granted to Captain M F Reaney M.B., I.M.S., Civil Surgeon, Akola with effect from the 1st May 1912, or the subsequent date on which he may avail himself of it.

PRIVILEGE leave for three months, under Article 260 of the Civil Service Regulations, is granted to Captain J M A MacMillan M.B., I.M.S., Civil Surgeon, Hoshangabad, with effect from the 17th May 1912, or the subsequent date on which he may avail himself of it.

FIRST Grade Civil Assistant Surgeon Bipin Bihari Gupta, in charge of the Main Dispensary, Hoshangabad, is appointed to officiate as Civil Surgeon, Hoshangabad, during the absence on leave of Captain MacMillan, or until further orders.

CAPTAIN C C C SHAW, M.D., I.M.S., Civil Surgeon, Raipur, is placed in visiting medical charge of the Drug District.

MILITARY ASSISTANT SURGEON A R EMMETT is appointed to officiate as Civil Surgeon, Akola, with effect from the 2nd May 1912, *vice* Captain M F Reaney, M.B., I.M.S., Civil Surgeon, on privilege leave.

THE services of Captain A W Greig, M.B., I.M.S. are placed temporarily at the disposal of the Government of the Punjab for employment in the Jail Department, with effect from the 2nd May 1912.

CAPTAIN W R J SCROGGIE, I.M.S., officiating Civil Surgeon of Coorg is granted privilege leave for one month with effect from the 15th May 1912, or the subsequent date on which he avails himself of the leave.

ASSISTANT SURGEON E A DAVIES of the Indian Subordinate Medical Department is appointed to officiate as Civil Surgeon of Coorg during the absence on privilege leave of Captain W R J Scroggie, I.M.S., or until further orders.

MAJOR A Gwyther, I.M.S., took over the Civil Surgeoncy of Darjeeling on 30th May, relieving Captain Fleming Barnard who has gone on furlough. At the King's Birthday State Dinner His Excellency the Governor of Bengal invested Major Gwyther with the Kaiser Hind Gold Medal.

LIEUTENANT COLONEL G G GIFFARD, I.M.S., Professor of Midwifery in the Medical College, Madras, was given 42 days' privilege leave and also placed on special duty to consult with the Principals of the Medical Colleges at Bombay and at Calcutta.

MAJOR P C GABBETT, I.M.S., is due out for 2 years' furlough in August 1912.

MAJOR C B HARRISON, I.M.S., is due out for 1 year's leave on 5th September.

CAPTAIN F O FRASER, I.M.S., has reverted to the Military Department from Civil employ, Madras.

THE services of Captain W D Wright, M.B., I.M.S., are placed temporarily at the disposal of the Government of the United Provinces for plague duty.

MAJOR T H FOULKES, F.R.C.S., has passed the examination for the M.R.C.P.

CAPTAIN C A GOURLAY, M A, M B, has taken the M D degree "with Commendation" at Glasgow University, with a Thesis, on the vital statistics of Eastern Bengal and Assam

THE services of Captain F C Fraser, M D, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India

DIWAN BAHADUR HIRA LAL BASU, Professor of Anatomy at the Medical College Calcutta, is granted combined leave for six months, namely, privilege leave for three months, with furlough for three months, in continuation, with effect from the 18th April 1912, or the subsequent date on which he may avail himself of it

CAPTAIN F A BARKER, M B, I M S, Superintendent of the cellular and female jails, and Civil Surgeon, Port Blair, is granted privilege leave for two months and nineteen days, with effect from the 4th June 1912

CAPTAIN H W PIERPOINT, Indian Medical Service, is appointed to officiate as an Agency Surgeon of the 2nd Class, and is posted as Civil Surgeon in the Khyber Agency and Medical Officer, Khyber Rifles, with effect from the 6th April 1912

CAPTAIN C I BRIERLEY, Indian Medical Service, an Officiating Agency Surgeon of the 2nd Class, is posted, on return from furlough as Civil Surgeon, Peshawar, with effect from the 7th April, 1912

CAPTAIN W M ANDERSON, Indian Medical Service, an Agency Surgeon of the 2nd Class, is posted, on return from furlough, as Residency Surgeon, Gwahar, with effect from the 9th April, 1912

WITH reference to the notifications quoted in the margin the promotion to the present rank of Major Archibald Nicol Fleming, M B, F R C S F, published in Army Department Notification No 638, dated the 7th August 1908, is antedated from the 29th July 1908 to the 29th January 1908. This means that Major Fleming has received accelerated promotion

MAJOR J C H LIECFSTER, I M S, on leave, is appointed to be a Civil Surgeon of the 2nd Class, with effect from the 1st April 1912

THE following notification by the Government of Bengal is republished for general information —

The services of the following Medical Officers are placed at the disposal of the Government of Bihar and Orissa, with effect from the 1st April 1912 —

I M S Officers

Major J C H Liecestet

" J W D Megaw

Temporary I M S Officers

Captain L Cook

MAJOR J W D MFGAW, I M S, on leave, is appointed to be a Civil Surgeon of the 2nd Class, with effect from the 1st April 1912

CAPTAIN R D MACGREGOR, I M S, has been granted by His Majesty's Secretary of State for India a further extension of leave on medical certificate for six months

ON his return from leave Senior Military Assistant Surgeon and Honorary Captain J F Goldsmith is posted to the Civil Medical charge of the Insein and Hantawaddy Districts excluding the Syriam Municipality, in place of Third Grade Civil Assistant Surgeon Subbarayappa Rama Aiyer, I M S (Madras), transferred

LIEUTENANT COLONEL J PENNY, I M S, Civil Surgeon Bassein, is appointed to officiate as a First Class Civil Surgeon, with effect from the 3rd April 1912, afternoon, in place of Major T Stodart, I M S, who has been appointed to officiate as Superintendent of the Rangoon General Hospital

MR FRED F SALDANHA, L M & S, M R C S, L R C P (London), has been entertained as a temporary Assistant Surgeon and appointed to act in medical charge of the C R Wadia Dispensary, Thana, with effect from the afternoon of the 27th April 1912, vice Assistant Surgeon D E, Anklesaria, L M & S, granted leave

THE undormentioned 2nd Class Assistant Surgeon, having completed seven years' service in that class, to be 1st Class Assistant Surgeon, with effect from the 17th April 1912 —

William George Meish

SENIOR ASSISTANT SURGEON and Honorary Captain Cajetan Maie DeSouza superannuated, with effect from the 19th April 1912

LIEUTENANT COLONEL C DUER, M B, F R C S, I M S, Civil Surgeon, Simla (West), is granted leave on urgent private affairs for six months, with effect from the 2nd May 1912

LIEUTENANT COLONEL C H JAMES, C I E, F R C S, I M S, Medical Adviser, Patiala State, is appointed, with effect from the date on which he assumes charge of his duties, to officiate as Civil Surgeon, Simla (West), during the absence on leave of Lieutenant Colonel C Duer, M B, F R C S, I M S, or until further orders

CAPTAIN R C BROWN, M B, I M S, is appointed to act as Assistant Director, Central Research Institute Kasul, during the absence on leave of Major S R Christopher, M B, I M S, or until further orders

THE services of Captain A Cameron, M B, I M S, and of Captain H C Buckley, M B, F R C S, I M S, Plague Medical Officers in the Punjab, are placed at the disposal of the Home Department

THE Director General I M S has decided that the white (hot weather) Mess Jacket should have a *stand up* collar, not a "roll" collar

UNDER the provisions of Articles 260, 233 and 308 (b) of the Civil Service Regulations, privilege leave to the amount due and furlough in continuation thereof for a total combined period of twelve months is granted to Dr F A Foy, M B, C M D P H, Port Health Officer, Rangoon with effect from the date on which he may avail himself of the privilege leave

ON return from leave, Captain H B Scott, I M S, is appointed to officiate as Port Health Officer, Rangoon, during the absence of Dr Foy proceeding on leave

UNDER the provisions of Articles 260, 233 and 605 of the Civil Service Regulations, and with reference to Articles 435 and 436 of Army Regulations, India, Volume I, privilege leave for one month and nineteen days and leave in India in continuation thereof for a total period of six months, is granted to Honorary Captain J F Curran, I S M D, on account of ill health, with effect from the 16th April 1912, before noon

ON being relieved by Second Class Military Assistant Surgeon C G Crow, Second Class Military Assistant Surgeon D D Stewart is posted to the Civil Medical charge of the Marhum District in place of Mr R A Hollingsworth, L R C P and S (Edin), proceeding on leave

UNDER the provisions of Article 260 of the Civil Service Regulations privilege leave for three months is granted to Mr R A Hollingsworth, L R C P and S (Edin), with effect from the 1st June 1912, or such date as he may avail himself of the leave

FIRST Class Military Assistant Surgeon W St M Heffernan was granted by His Majesty's Secretary of State for India an extension of leave up to the 16th November 1911, before noon

This department Notification No 393 of the 6th December 1911 is hereby cancelled

THE services of Major O F Weinman, I M S, Officiating Civil Surgeon of Purnea, are placed at the disposal of the Government of Bengal, with effect from the date on which he may be relieved. Major Weinman is appointed temporarily to Dinajpur as Civil Surgeon

CAPTAIN N W WACKWORTH, I M S, now on Special Plague duty at Bhagalpur, is appointed temporarily to act as Civil Surgeon of Purnea

CAPTAIN A G TRFSDIFFER, I M S, is appointed to be specialist in Midwifery and Diseases of Women and Children, 2nd (Rawalpindi) Division, with effect from 19th April 1912

CAPTAIN C H REINHOLD, I M S, is appointed to be specialist in Advanced Operative Surgery, 4th (Quetta) Division, with effect from the 1st May 1912

HIS Excellency the Governor of Bombay in Council is pleased to appoint Captain B Higham, M.B., B.S. (Lond), I.M.S., to be Chemical Analyst for Sind and Health Officer of the Port of Karachi.

CAPTAIN A CAMERON, I.M.S., assumed charge as officiating Civil Surgeon of Rae Bareilly on the forenoon of the 9th May 1912.

CAPTAIN H C BUCKLEY, I.M.S., assumed charge as officiating Civil Surgeon of Sitapur on the forenoon of the 17th May 1912.

CAPTAIN E C HEPFER, I.M.S., Civil Surgeon, Bahraich, privilege leave for one month, with effect from the 1st June 1912, or the date of relief.

LIEUTENANT COLONEL H B MELVILLE, I.M.S. Civil Surgeon, was granted privilege leave, combined with furlough on medical certificate for a total period of eight months, from the 4th March 1912.

ERRATUM.—In Punjab Government Notification No. 183, dated 16th April 1912, notifying the date on which Captain J G Swan, I.M.S., made over charge of the duties of Superintendent of the Ludhiana Jail to Captain A K Laidlaw, I.M.S., for "afternoon of the 1st April 1912" read "forenoon of the 1st April 1912".

CAPTAIN A W GRIGG, I.M.S., whose services have been placed at the disposal of this Government by the Government of India, Home Department, reported his arrival on the 1st May 1912 and took over charge of the duties of Superintendent, Central Jail, Montgomery, on the forenoon of the 7th May 1912, relieving Assistant Surgeon H V W Cox.

LIEUTENANT COLONEL O DUER, M.B., F.R.C.S., I.M.S., held charge of the current duties of the Civil Surgeon, Simla (East) in addition to his own as Civil Surgeon, Simla (West), from the 4th March to the 14th April 1912, both days inclusive.

THE services of the undermentioned officers are placed temporarily at the disposal of the Government of the United Provinces—

Captain A Cameron, M.B., I.M.S.
Captain H C Buckley, M.B., F.R.C.S.F., I.M.S.

CAPTAIN R KNOWLES was appointed with effect from 22nd April to officiate in the Bacteriological Department.

MAJOR E D W GREIG, I.M.S., was appointed to the Special Cholera Inquiry, and Captain J Cunningham, M.D., I.M.S. acts as Assistant Director, Central Research Institute.

THE following notices are in *Gazette of India*, dated 25th May 1912—

Captain J Morrison, I.M.S., is appointed (sub pro tem) to the Bacteriological Department, with effect from 1st September 1911.

Captain F W Cragg, M.D., I.M.S., is appointed (sub pro tem) to the Bacteriological Department, with effect from 15th January 1912.

Captain H W Aiton, I.M.S., is appointed (sub pro tem) to the Bacteriological Department, with effect from 6th March 1912.

WE quote the following from the letter of Sir Percy Lake, Chief of the general staff, on the Abor expedition as published in the *Gazette of India*, May 25th 1912.

In *Indian Medical Service*—To the efficient carrying out of sanitary and other medical duties, the comparatively good health and absence of epidemic disease is largely due.

Major J Davidson, Assistant Director, Medical Service, has done well in that capacity.

Captain C W I Melville is a very good officer and well worthy of advancement. He acted as Staff Surgeon and also accompanied exploration parties.

The good work done by the following was noticeable—

Captain J S O'Neill.

First Class Sub Assistant Surgeon Mahadeo Parshad.

Second Class Senior Sub Assistant Surgeon Niranjan Das.

MAJOR R F STANDAGE, Indian Medical Service (Bombay), an Agency Surgeon of the Second Class, is granted privilege leave for two months and five days combined with furlough for one year and four months, with effect from the 25th April 1912.

MAJOR R W KNOX, Indian Medical Service (Madras), an Agency Surgeon of the Second Class, is posted as Residency Surgeon in Mysore, with effect from the 25th April 1912.

CAPTAIN J B D HUNTER, Indian Medical Service, an Agency Surgeon of the Second Class and Medical Officer in Sistan, is appointed to hold charge of the current duties of the office of His Britannic Majesty's Consul for Sistan and Kaim, in addition to his own duties, with effect from the 1st April 1912.

LIEUTENANT J G B SHAND, I.M.S., is promoted to be Captain, I.M.S., dated 30th January 1912.

LIEUTENANT COLONEL H GRILLY, I.M.S., is gazetted as retired from 27th April 1912.

PRIVILEGE leave for two months, under Articles 242 (a) and 269 of the Civil Service Regulations, is granted to Honorary Captain J Morrison, Special Plague Medical Officer, Central Provinces, with effect from the 10th May 1912, or the subsequent date on which he may avail himself of it.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "*The Indian Medical Gazette*," Rs. 12, including postage, in India. Rs. 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED—

O Begg's *Syphilis, Diagnosis and Treatment*. (Wright & Sons)
Stephen Paget's *For and Against Experiments on Animals* (H K Lewis) 3s. 6d.
Capt Patton's *Oriental Sores* (Govt Printing, India)
Administration Report, F B & A
O Pott's *Electricity* (J & A Churchill)
Anatomy 1, *Calculus Series* (E & S Livingstone) 1s.
New and Non official Remedies (Am Med Assoc)
Rawlings' *Landmarks and Surface Markings*, 5th Ed (H K Lewis) Price, 6s.
H L McKisack's *Systematic Case Taking*, (Baillière, Tindall & Cox)
Jackson's *Fifth Edition of Wheeler's Handbook of Medicine*
D McKisack's *Public Health* (J Wright & Sons), 4th Ed (L & S Livingstone) 8s.
Herry & Jegg's *Harellp and Oelf Palato* (J & A Churchill) Price, 12s. 6d.
Howlett's *Pathology*, 3rd Ed (J & A Churchill) Price, 10s. 6d.
Moulton's *Duodenal Ulcer*, 2nd Ed (W B Saunders & Co)
J B Murphy's *Surgical Clinics* (W B Saunders & Co)
Sewell and Chaudhuri, *Indian Fish and Mosquitoes* (Indian Museum)
Whiteford's *Operating Theatre for Private Practice* (Harrison & Sons)
Records of Indian Museum Vol VII Part 2 May 1912
Inchol Book, by S A S Soldman Khan (Commercial Press, Meerut)
Schultz's *Studies in Anaphylaxis* (Hys. Lab Bulletin, No. 80)

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM—

Captain L A C Mathews, I.M.S., Dehra Doon Major Clemesha, I.M.S., Calcutta Major Ross, I.M.S. Bangalore Lt Col B Seton, I.M.S., Simla, Lt Cooper, I.M.S., Dr Lechmere Taylor Bannu Lt Hodges, I.M.S., Hongkong, Major Milne, I.M.S., Manourie Capt Barber, I.M.S., Port Blair, Major Thornely, I.M.S., Arrah, Major Dolans, I.M.S., Chupra, Capt H Jack, I.M.S., Blama, Dr Rabdy, Madras Major T Jackson, Ahmedabad Capt H Steen, Calcutta Major Whitmore, I.M.S., London, Dr Trumurt, Madras Lt Col Andersen, I.M.S., Chittagong Capt Sanda, I.M.S., Calcutta, Dr W C Hossack, Calcutta, Major Clayton Lane, I.M.S., Berhampur, Capt A S Lisle, I.M.S., Insels Lt Col R H Elliot, Madras Capt May Burgess, I.M.S., Darjeeling Dr White Robertson, London Maj I A O Mathews, Dehra Doon

Original Articles

NASTIN TREATMENT OF LEPROSY *

By L B SCOTT,

CAPT., I M S

BRIEF HISTORY

NASTIN treatment was begun in the Sylhet Asylum by Captain J W McCoy, I M S, in July 1909. It was carried on by Dr R Ashe from March 1910 to March 1911 and from that time by myself.

At first only 2 lepers were placed under treatment. The number was increased to 7 by January 1910, and to 11 in September 1910. During the first half of 1911, 12 lepers were under treatment. The sanction of Government was then asked for and obtained to treat all patients in the Asylum with Nastin, the results up to date having been so encouraging. Since July 1911 this has been done.

There have been some irregularities and intermissions in the treatment. It was stopped for 4 months in 1910 for want of funds and shorter intermissions have been due to the supply of Nastin running out, and in individual cases to symptoms or intercurrent diseases which contra-indicated the injections. On one occasion the Calcutta agents ran out of Nastin and for a few weeks none was available. A large supply has since been obtained direct from England.

Up to the end of 1910, 271 injections had been given. During 1911, 433 were given. Actually 35 patients have been given Nastin since the treatment first began. Six of these only had a very few injections, not sufficient to yield any result. They are not included in the list of cases appended.

Only Nastin BI has been used. Injections are made by an all-glass syringe kept after preliminary sterilisation in anhydrous ether. Only the needle is re-sterilised in a flame before each injection.

At first fortnightly injections were given. They are now given weekly unless contra-indicated by severe reaction from the previous injection or some other special symptom.

In only one case has an abscess developed at the site of injection.

The general reaction has in no case been dangerous. It has been fairly severe in a few but usually slight. The injections have mostly been given by the Sub-Assistant Surgeons in charge of the Leper Asylum, viz S A S Kunja Lal Ganguly from January to 15th August and

17th October to 6th December 1911. S A S Kotiswar Guha from 16th August to 16th October, and from 7th December to 31st December 1911. He has also kept the notes which are frequently checked by the Civil Surgeon.

The notes are now made systematically according to a scheme which I have drawn up. A copy of this scheme is appended to the report. The notes of some of the earlier cases are incomplete.

MICROSCOPICAL EXAMINATIONS

Microscopical examinations of all cases have been made by myself since March 1911. Very few were made before this date. It has not been possible to repeat the examinations as often as desirable owing to want of time. My experience in this respect is that bacilli can almost always be found in a Lepioma, but not nearly so frequently in a slide made by scraping an ulcer. I have always failed to find them in slides made by rubbing the nasal mucous membrane. In many of the cases the first microscopical examination was made after the patient had already been for a long time under treatment and ulcers had healed and leptomata disappeared.

Weightment of patients has been begun from November 1911, when a weighing machine was obtained. Before this no machine was available and weights were not recorded. The observations have not been continued long enough to be of any value for the purposes of this report, and are not included in the extracts from notes appended.

Temperatures have not been regularly taken as the officer in charge has many other duties to perform and cannot spare the time to take so many temperatures regularly.

SUMMARY OF RESULTS

The general results have been eminently satisfactory. Almost every case has shown very marked and evident improvement. It is certain that mild cases may be so far improved as to local symptoms and show no demonstrable signs of the disease. How far such a "cure" is permanent still remains to be seen.

My impression is that severe cases improve fairly rapidly up to a certain point at which progress seems to cease or become very slow. Four patients have been discharged as cured, two since I became superintendent, one of the latter, viz, case No III, had no demonstrable signs of the disease left. Case No II had only a few faint patches of discoloration on the skin remaining and no other signs or symptoms. The other two cases, No 12 and No 16, probably had some anaesthesia remaining. The numbers of injections given to these cases were —

Case	(2)	(3)	(12)	(16)
-	29	50	9	36

* Paper forwarded for publication by Colonel R Neill Campbell, C I E, C B, I M S

Details of cases treated with Naxin in Sylhet Lepers Asylum in 1909-11

Name, etc	Date of admission	Principal symptoms	Microscopical examination	NAXIN TREATMENT			Result
				Date of commencement	No of injections	Period under treatment	
I—Prakash Ram, male, age 40	26 7 08	Anaesthesia. Erythematous patches. Loss of perspiration. Face thickened and nodular. Lepromata over whole body. Ulceration. Loss of phalanges. Great weakness. Sexual power much diminished.	Once negative 28 6 11 from an old ulcer on finger	18 7 09	77	2½ years	Still an obvious leper, but very much improved. Can do laborious work without getting tired. Sexual power now normal. Skin normal in appearance. Perspiration returned. Face wrinkled and lobes of ears elongated, but all thickening disappeared. Nose depressed. All lepromata disappeared but feet still thickened and fingers and toes clubbed. Only hands and feet are now anæsthetic. Discharged by board as cured. There was an intermission of treatment from March to September 1910. The patient left hospital, but returned for more injections. Great improvement. Patches gone. Great improvement in anaesthesia. Can straighten his fingers and work with his hands. Thickening of eye brows disappeared. Died of dysentery. He improved considerably under treatment. His face became much more natural in appearance and feet and hands smaller in size. The lepromata diminished in size and many disappeared. He felt much better and put on flesh for a time. He lost his voice in about June 1911. From October 1911 he began to get weaker and he gradually sank till he died of dysentery in December 1911. To the end he was covered with lepromata and his feet and hands were much swollen and covered with ulcers. Absconded from asylum. Latest note of progress dated 1st December 1910 after 14 injections. Feels better. Perspiration returned. Swelling of feet and ankles much diminished. Ulcers in nose healed. Anæsthesia and ulcers of feet unchanged. Improved somewhat. Feels better. Has less pain and growing sensation. Sleeps well. No visible changes.
II—Ramdas, male, age 40	8 5 09	Anaesthesia. Patches. Scars of old ulcers. Loss of phalanges. Very weak. (Note not very complete)	None made	20 7 09	29	7 months	9 5 10
III—A D 1 male, age 28	16 1 09	Anaesthesia. Patches. Thickening of eyebrows with loss of hair. Fingers crooked. Toes thickened.	Once, negative 24 4 11 from nasal mucous membrane	8 8 09	50	1 year 2 months	27 4 11
V—Jadob, male age 18	12 10 09	A very severe case of leprosy. It is impossible to tell his age or sex from his general appearance. Anaesthesia. Face enormously thickened and features distorted with nodules. Innumerable lepromata all over the body. Hands and feet elephantoid in appearance and covered with ulcerating lepromata. General health very bad.	Twice, positive 9 5 11 and 24 5 11 from ulcerating lepromata	28 10 09	71	2 years	9 12 11
V—Ali Muhammad, male age 35	27 6 10	Anaesthesia. Patches. Loss of perspiration. Features thickened. Feet and ankle swollen. Ulceration of nose. Distortion of digits and loss of toes. Sexual appetite present.	Once positive 24 4 11 from a tubercle near nostril	25 7 10	30	9 months	27 4 11
VI—Tooni, male, age 28	15 2 04	Anaesthesia. Patches. Right foot and ankle much thickened. Ulceration of feet. Distortion of fingers and toes. Loss of all toes of right foot.	Once negative 22 12 11 from ulcer on finger	25 7 10 He then refused injections for a year, and became a hemiplegic on 11 9 11	3 10	1 month 4 months	1 month 4 months

VII—Sudary age 42	25 7 10	Anaesthesia nose, ears and feet Loss of phalanges Distortion of fingers Sexual power not lost	Once, negative S 7 11 from nasal mucous membrane	25 7 10	32	1 year 5 months	21 11 11	Died of dysentery after suffering from it for 3 or 4 months. He had an abscess at the site of one of the injections after which they were stopped for 4 months. Some improvement felt better. Had less pain and more sexual power. Thickening of feet and face diminished.
VIII—Ronghl, male, age 40	4 2 05	Anaesthesia shortened toes crooked and contracted shortened ulnar nerve thickened Sexual power diminished	Once, negative S 7 11 from ulcer on sole	18 10 10	42	1 year 2½ months		Has improved. Feels better and now has no pains. Thickening of feet much less. One ulcer healed. Sensation returned to many parts which were anesthetic. Still has ulcers on both soles. His sexual power is very slight though improving. Right ulnar nerve still thickened.
IX—Annknath, male, age 65	13 4 08	Extensive anaesthesia ulnar nerve thickened Loss of per- spiration Ulceration of nose and feet Loss of toes Contraction of fingers Complete loss of sexual power Very weak and full of pains	Once negative S 7 11 from ulcer on sole	18 10 10	37	1 year 2½ months		Much improved. Feels much better and stronger. Has lost his pains and slightly regained his sexual power. Perspiration returned to anesthetic patches. Sensation returned everywhere except to hands. Has regained the use of his hands and can now split bamboo with dao which power was quite lost. Still has 2 ulcers on sole of right foot. Both ulnar nerves thickened.
X—Ghasar, male, age 32	9 8 10	Anaesthesia ear thickened Patches Eye brows and ulcers Fingers and toes atro- phied and contracted Loss of sexual power	Once, negative S 7 11 from ulcer on finger	17 1 11	30	11½ months		Improved. Feels stronger. Has lost his pains and is regaining sexual power. Sensa- tion returning to anesthetic parts and patches becoming more normal in colour. Thickening of eyebrows and ears less. Ulcers all healed.
XI—Karim Sheikh, male, age 28	27 8 10	Anaesthesia thickened arms and feet Thickening of eye brows feet and fingers and elbows Ulcers on soles Loss of sexual power Cannot walk without a stick Very weak	Twice, negative S 6 11 and S 7 11, scraping from ulcer on foot and bleb on dorsum of foot	17 1 11	32	11½ months		Wonderfully improved. Strong and can work. Sexual power not returned. All lepromata disappeared. All ulcers healed. Thickening all gone down except on olecro- non process. Patches now scarcely to be seen. Still anesthetic in parts but much improved. Ulnar nerve still much thick- ened.
XII—Kuloo John, male, age 40	7 9 10	Anaesthesia toes Ulceration of sole Gnawing pains Sexual power present	Once, positive by Civil Surgeon, Cachar, on 18 10 from ulcer on foot Once, negative 9 4 11 from same ulcer	17 1 11	9	4 months	20 5 11	Discharged as "cured" by board. Sensa- tion returned to all anesthetic parts. Ul- cers healed. Patches disappeared. Feels much stronger. Leprosy bacilli were found in the ulcer on the foot before admission. A scraping of the same ulcer, almost healed before discharge, showed no bacilli.
XIII—Manicksingh, male, age 42	1-12 10	Anaesthesia thickened Face leonine Multiple lepromata on face and forearms Fingers and toes thickened Dis- charge from nose and swellings in nasal cavities with ulcers	Once, positive S 6 11 from tubercle of ear	17 1 11	26	10 months	19 11 11	Died of choleric diarrhoea after 3 or 4 days' illness. Great improvement. Nodules much diminished. Face became almost normal in appearance. Ulceration of nose completely healed. Anaesthesia improved. Fingers and toes much thinner. Sexual power improved.
IV—Jangmit, female, age 50	18 2 11	Anaesthesia features One leproma on chin Hands normal A few scars on feet Digits normal Ulnar nerves normal	Once, positive S 7 11 scraping from leproma on chin	21 2 11	28	10 months		Feels better, lighter and more active. Has lost her pains. Patches more normal in colour. Thickening of face much less. Le- proma quite disappeared.

Details of cases treated with Naxin in Sylhet Lepers Asylum in 1909-11—(Contd)

Name, etc	Date of admission	Principal symptoms	Microscopical examination	NAXIN TREATMENT			Date of discharge	Result
				Date of commencement	No of injections	Period under treatment		
XV—Kul Mistri, male age 35	31 8 10	Anaesthesia ed Tubercle on arms Fingers and feet much thickened Ulcers on soles Ulnar nerve thickened	Twice, positive 5 7 11 and 22 12 11	Aug 10	39	1½ years		Much improved, but still an obvious leprosy, face and nose being still nodular and deformed, much less thickened. Most of the nodules are gone but a few are left. Sensation returned to many of the anesthetic parts. Fingers thinner but still much thickened. Ulcers all healed. Ulnar nerves still thickened.
XVI—Jashbahaduri male, age 20	5 6 09	Anaesthesia Thickening of face Lepromatous (Note incomplete)	None made	8 8 09	36	1½ years	7 1 11	Discharged as 'cured' by board. Much improved. Feels much better. Lepromatous thickening of face diminished. Sensation returning to the anesthetic patches. (Note incomplete. No note of condition on discharge)
XVII—Mestha, male, age 38	12 10 09	Anaesthesia Eyebrows thickened (Note incomplete)	Ditto	20 10 09	27	9 months	21 7 10	Left asylum of his own wish. Much improved. Feels stronger and can now do laborious work which before was impossible. Anesthesia less. (Note incomplete)
XVIII—Baparam, male, age 35	10 4 11	Anaesthesia Ulnar nerves thickened Face leonine Ulceration and catarrh of nose Ulceration of feet Loss of toes Very weak and lost sexual power	Once, positive 21 4 11 Once, negative 22 12 11, both from ulcers on foot	15 4 11	21	8½ months		Great improvement. Feels much stronger and better. Pain improved. Face now very little thickened. Sensation returned to many parts which were anesthetic. Sexual power almost normal. Ulcer of nose healed with contraction of right nostril so that it is almost closed. Ulnar nerves the same. Still an ulcer on right sole. Microscopical examination showed bacilli in April but none in December.
XIX—Jagdeo Kumari (convict leper), male, age 20	19 5 11	Anaesthesia Patches Ulnar nerves thickened Toes thickened Fingers contracted Two perforating ulcers on soles Discharge from nose Sexual power diminished	Twice negative 24 6 11 and 8 7 11 Once from nose and once from ulcer on heel	5 7 11	15	6 months		Marked improvement. Nose normal in appearance. Feels much better and stronger. He has lost his pains. Sexual power much improved. Patches almost invisible. Anesthesia much improved. Fingers much straighter and can do work with his hands which he could not do before. Ulcer of left foot healed and on right foot smaller. Nasal discharge stopped. Ulnar nerves the same. Feels much better. Sexual power returned. Sensation returning to anesthetic patches. Some patches can distinguish hot and cold which power was lost. Has lost his pains and heuristics. Ulnar nerves the same.
XX—Baneswar, male, age 20	19 6 11	Anaesthesia Patches Ulnar nerves thickened Loss of perspiration Loss of sexual power	Twice, negative 26 8 11 and 8 7 11 from nasal mucous membrane	8 7 11	16	6 months		Much improved. Feels very much stronger and better. Regaining power in arms. Can now write which power was lost for 1½ years. Size of wasted muscles has increased. Improvement in anesthesia not demonstrable, but he says it is better. Ulcer on sole very nearly healed. Ulnar nerve still thickened. Sexual power almost normal.
XXI—Chandra Saama, male, age 42	31 9 11	Anaesthesia Patches Paresis and muscular wasting of arms Ulnar nerves thickened Ulcer on foot One toe lost Much emaciated Sexual power much diminished	Once, positive on admission from ulcer on sole	15 8 11	11	4½ months		

XXII — Bison, male age 30	15 8 11	Anesthesia checks and nose thickened sexual power Gnawing pains Patches Forchhead Loss of	No ulcer or nodule from which slide could be made	18 8 11	11	4 1/2 months	Considerably improved Gnawing pains less Facio much less thickened Anesthesia much improved Patches can now distinguish hot and cold, but legs and arms still anesthetic Patches more normal in colour Sexual power improved
XXIII — Horroan, male age 31	28 8 11	<i>An advanced case</i> Anesthesia Ultnai nerves thickened Lepiomata (multiple) Thickening of features Ulceration Feet covered with warty growths Partial loss of sexual power	Twice, positive on admission and on 22 12 11, both from tubercles	3 9 11	10	1 month	Decided improvement Feels better and stronger Sexual power the same Face less thickened Tubercles much reduced in number and size Ulcers healing Warty growth disappeared
XXIV — Kinkon, male, age 30	3 8 11	Anesthesia Patches Ultnai nerves thickened Muscular wasting Slight thickening of eyebrows Ulcers Loss of phalanges of fingers Partial loss of sexual power	Once, negative 22 12 11 from ulcer on sole of foot	11 9 11	10	3 1/2 months	Decided improvement Pains gone Feels much better and stronger The ulcers are healing Face now normal Sensation returning in legs Muscles of wasted parts have increased in size and are stronger Sexual power much improved
XXV — Kaitishim, male, age 23	30 7 08	Partial anesthesia Patches Ultnai nerves thickened Cheeks and nose thickened Tubercles on penis In glandular glands enlarged Ulcer on foot Sexual power slightly diminished	Once, negative 22 12 11 from ulcer on foot	24 9 11	10	3 months	Feels better and stronger Gnawing pains less Anesthesia much improved Patches are more normal in colour Sexual power improved
XXVI — Chirum, male age 50	27 2 06	Anesthesia Loss of perspiration in arms Ultnai nerves thickened Muscular atrophy in arms Thickening of eyebrows, nose, cheeks, feet and ankles Fingers and toes distorted and shortened Ulceration of hands and feet Sexual power not affected	Once negative 22 12 11 from tubercle on foot	19 10 11	9	2 1/2 months	Says he feels better and has less pain Some return of sensation in skin No visible changes yet
XXVII — Kistom, male age 50	13 10 05	Anesthesia Loss of perspiration Paresis and muscular wasting in legs Ultnai nerves thickened Fingers thickened and distorted Loss of toes Ulceration of feet Loss of sexual power	Once, negative 22 12 11 from ulcer on sole	19 10 11	10	2 1/2 months	Says he feels better and lighter and has some return of sexual power Sensation returning to the anesthetic parts Ulcers have got smaller Other symptoms as before
XXVIII — Magah, male age 60	9 5 02	Anesthesia Patches Ultnai nerves thickened Thickening of foot and ankle Atrophy and distortion of fingers Ulceration of feet	Once, positive 22 12 11 from ulcer on foot	25 11 11	5	1 month	Slight improvement apparent in patches As he is half witted it is difficult to extract any information from him
XXIX — Golo, male, age 45	26 11 11	Anesthesia Exfoliative dermatitis of whole body with slight nodulation of skin Ultnai nerves enlarged Face, hands and feet thickened face leonine Ulceration and discharge from nose, which is depressed Ulceration of feet Discharge from eyes Inguinal and axillary glands enlarged Sexual power almost abolished	Once positive 22 12 11 from ulcer on foot	3 12 11	4	1 month	Skin a little smoother Ulcers look healthier No other improvement

Case No 12 was examined by the Civil Surgeon of Cachar before admission and leprosy bacilli were found in the ulcer on the foot. A scraping from the remains of the same ulcer shortly before discharge showed no bacilli.

Three deaths have occurred, all in the year 1911. Only one of these can be definitely put down to leprosy, *viz.* case IV, the severest and most advanced case in the asylum. He was a boy aged 18, on admission, who developed the disease at the age of 8. He was under Nastin treatment for 2 years and had 71 injections. He made very decided improvement for about 18 months. Progress then ceased and he gradually declined and died with dysenteric symptoms. This is the only case that can be called a failure, and even in this boy there was improvement and arrest of progress of the disease for 18 months.

Case VII made considerable improvement under Nastin, but developed dysentery and died after suffering from it for 3 or 4 months. There were no signs of his leprosy becoming worse before death.

Case XIII after making great improvement died of choleraic diarrhoea (possibly true cholera) after a very few days' illness. The following small table summarises the results obtained so far as this can be done —

No of injections.	Cured	Greatly improved	Decidedly improved	Slightly improved	Totals
70 and over		1	1 (died)		2
50 "	1				1
30 "	1	4	3 (1 died)		8
20 "	1	4 (1 died)			5
10 "		3	5	1	9
Under 10	1			3	4
Totals	4	12	9	4	29

It may be certainly affirmed that the treatment has cured some cases to all appearances and markedly improved every case without exception. It has also definitely arrested the progress of the disease. The development of any fresh leprous lesion or serious symptom after treatment had begun has been very rare. A few fresh lepromata and ulcers (chiefly due to burns or abrasions) have appeared during the early stages of treatment, and in case IV after arrest of progress for 18 months the disease attacked the patient's larynx and he lost his voice.

The general feeling of the patients is very strongly in favour of Nastin. Many of them continually clamour for more injections, and a

great outcry arises if any intermission takes place.

The tables on pages 302 to 305 give full details of the 29 cases containing all the principal points extracted from the notes. I have thought it best to present them in tabular form rather than to give the full notes. A brief study of the table will convey an accurate idea of the results obtained in much less time than a perusal of full notes.

MONGOLIAN BIRTH MARKS AN ANTHROPOLOGICAL STUDY

By LAWRENCE G FINK, M.B., C.M. (Edinburgh),

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1 *Description by Henri Bealx of Blue Patches on the skin of Mongolian Children*—The description below by Henri Bealx is taken from his article on the "*Races of East Asia with special reference to Japan*." The quotation was sent to me by Mr C Morgan Webb, I.C.S., Census Commissioner, Burma, in July 1911, with a request to be furnished with information regarding any observations made by me on the presence of similar patches on the skin of children in Burma. Henri Bealx writes—"I now come to a test which is one of the most interesting in the whole of Anthropology, *viz.* the patches on the skin of Mongolian children. Until I described them eighteen years ago, those patches, strange to say, had never been considered, and, even now, they appear to be unknown to most Anthropologists. Every Chinese, every Korean, Japanese and Malay is born with a dark blue patch of irregular shape in the lower sacral region. Sometimes it is equally divided on both sides and sometimes not. Sometimes it is only the size of a shilling, and at other times nearly as large as the hand. In addition there are also more or less similar patches on the trunk and limbs, but never on the face. Sometimes they are so numerous as to cover nearly half the surface of the body. Their appearance is as if the child had been bruised by a fall. These patches generally disappear in the first year of life, but sometimes they last for several years."

2 *Observation regarding the presence of Blue Patches on the skin of Burman and Karen Children in the Myaungmya District, Burma*—In the Myaungmya Town out of 191 infants and children (varying in age from one month to three years) 181 were born with one or more blue patches, *i.e.*, 94.7 per cent. The patches occur as described by Henri Bealx. They are usually found in the lower dorsal and sacral region, are irregular in shape, and vary in size. I have seen them on all parts of the back, and they are not always strictly confined to the middle line. As a rule the majority disappear within the first twelve

months, but it is not uncommon to find them in children up to 3 or 4 years of age. I have also seen the marks on the sides of the chest, abdomen, and over the shoulder blades, but never on the face. In the Myaungmya Jail, a Burman, aged 31 years, had a dark blue birthmark over his left shoulder joint, showing the persistence of the patch for several years. Another adult Burman, aged 36 years, had a blue patch covering almost the entire left half of his abdomen, chest, and back, and extending along the inner and outer aspects of his left arm to his elbow joint. He stated that the site of the original birthmark, which was the size of the palm of his hand, was over the left side of his abdomen, and that during the past fifteen years or so it had gradually increased in size. If his statement can be relied on, this case is one of extreme rarity. There is still another Burman, aged 51 years, in the Jail who has his original birthmark, a dark patch over the entire left half of the abdomen, left side, and the corresponding portion of his back. The number of birthmarks that thus persist for years or for life, is small in comparison with the number that disappear in infancy and early childhood. During my vaccination inspection tours in this district I have examined a large number of children, and I am of opinion that from 90 to 95 per cent of these have been born with the dark blue patches. The blue colouration shows better in the fairer skin of the Karens than in the brown skin of the Burmans. The patches are pigmentary and not naevoid. One of my Sub-Assistant Surgeons and his wife, natives of the Toungoo District, have four children and all were born with patches, which disappeared within twelve months. Reverend Father Fagerton, a Roman Catholic Priest, who has worked in this district for the past nine years, informs me that he has seen over 1,000 Karen infants and he does not remember a single case in which a child was born without a patch. A child born to a European father and Talang mother had a small blue black patch on the back. A Eurasian married to a Karen woman has four children and all were born with a patch. It would be interesting to know whether these patches would occur in subsequent generations in the case of the children of the European and Eurasian fathers. The mother in each case was the dominant factor, as the children were born not merely with patches, but also with Mongolian physical characteristics. The study of these characteristics and patches in such children is a problem in heredity which I must leave for the consideration of those qualified to deal with the subject. As these patches are not known amongst pure European children their detection in North Italy, as has been reported by Consiglio, calls for explanation and would rouse a suspicion of some Mongolian ancestor. These patches might hence

be included amongst the other well-recognized characteristics of the Mongolian and may afford a clue, when other physical characteristics are faintly marked or entirely absent.

3 *Some Physical Characteristics of the Mongol*—These have been well described in a recent editorial in the *Journal of Tropical Medicine and Hygiene*, April 15, 1912, pages 120—121. They are briefly as follows—Slender bony frame, short stature, good muscular development (especially of calf muscles), delicate, hairless skin (scanty moustache, whiskers and beard), "obliquity of eyes" (due to a fold of skin on the inner side of the upper eyelid), flatness of the bridge of the nose, poor development of the air-cells in the frontal and nasal region and high pitched voice. The face of a Mongolian is easily recognised by the flat nose, "obliquity of eyes" and scanty hair. The Mongols derive their name from a word *mang*, which means "brave," "bold." Apart from the Mongols proper, the Chinese, Japanese, Koreans, Burmese (including Shans, Chins and other tribes of Burma), Malays, Ghourkhas, Tibetans, Bhootans, etc., are included in the Mongolian family. It would be interesting to know to what extent the blue patches occur on the skin of children belonging to each of these races, and to trace in the history of each any circumstance that may account for the decrease or absence of this Mongolian characteristic.

4 *The Tribes of Burma and certain Ethnological Considerations*—There is much interesting reading on this subject in the Chapter on Ethnology in the *Gazetteer of Upper Burma and the Shan States*. The principal groups are the Burmese, Tai (or Shan), Karen, Chin (or Haka) and Kachin (or Chingpaw) and there are numerous branches. Regarding these peoples the writers say—"It must not be forgotten that the splitting up, intermingling, and transfer from one place to another have happened on so extensive a scale that hybridity is much more common than pureness of race. The Tai of the East have been greatly affected, but not absorbed by the Chinese and by the pre-Chinese races. Those of the west have come under the influence of the Aryan and Dravidian races and have been equally, if not more, affected and still not absorbed. Changes have been brought about not merely by conquest, or migration, forced or voluntary. Slave raiding was until comparatively recent times universal all over Indo-China. Where the Chief had twenty-eight wives, the Captain might well have had his half-dozen and the plain soldier his couple. Most of the wives were aliens. Thus the physical features of the inhabitants of a locality might completely change in a couple of generations. The result may be seen on a small scale in the Shan Chiefs of ruling families. For years it has been the fashion for

the Sawbwas (Chiefs) to have Chinese, Burmese, Karen and Kachin wives, sometimes captured, sometimes bought, sometimes received as presents. Occasionally the issue of such unions succeeded to the State, with the result that often a Sawba is in appearance of a different race from the bulk of his subjects."

The immigration of Indians, many of whom take Burmese wives, has led to a further hybridisation the offspring being commonly known as Zerbadee. This admixture has resulted in a class of people with Mongoloid physical features. It would be interesting to know to what extent, if any the blue-black patches occur in Zerbadee children. I have made no observations as yet on this point.

It will thus be seen that there is much scope for investigation regarding this anthropological test in Burma, which is so closely in contact with China on one side and India on the other. The presumption is that admixture with Chinese would not diminish the incidence of the patches, whereas that with non-Mongolian Indians would do so in course of time.

It is a disputed point as to whether the founders of the Burmese race came from India or, through China, from the tableland of Asia. The *Gazetteer* has the following interesting passage—"We cannot yet say whether Burmese tradition, which represents that the founders of their race and nation came from the west, from the valley of the Ganges, into their present seats is right or whether they came through the South-Western Provinces of China from the tableland of Asia as Sir Arthur Phayre maintained. The history of the Shans, so far as we know it, seems to show that it would be unwise to reject peremptorily the Burman tradition, because it appears to prove clearly that Phayre's theory was without foundation. Everything combines to prove that Forbes was right when he concluded—

"That both the Tai and Karen races came by a different route from that taken by the Burman and Mon-Anam families. The Tibeto-Burman tribes, which now form the Burmese nation, arrived, according to their traditions in their present seats from the westward, about six centuries before the Christian era. In confirmation of this we find a chain of fragmentary cognate tribes reaching from the Gunduk river in the west of Nepal to the banks of the Irrawaddy, the footprints as it were of the march of their race."

If the Burmese tradition is correct it may yet be possible to trace the footprints of the march of this race by applying Herr Beal's test to the "cognate tribes," if these have not already been absorbed or radically changed. There is, however, no information obtainable by me as to what cognate tribes are referred to. If they be-

longed to the Mongolian family showing the characteristics of that group, and came from India, they would help to confirm the opinion expressed by Forbes regarding the Burmese race.

5 *Herr Beal's test in Italy the relation-ship of the Blue Patches to Spina Bifida*—Boulger in his very interesting history of China gives a detailed account of the Mongol invasion of China, Japan and Burma. The Mongols, he says were originally only one small clan among the numerous tribes bordering on the Chinese empire. In the strip of territory lying between the Onon and the Kerulon rivers, both affluents of the Amour, may be found the cradle of the Mongol race. It was in that region that Genghis Khan was born probably about A.D. 1162. According to Boulger, Genghis Khan was a military genius of the very first order, and it may be questioned whether either Cesar or Napoleon can as Commanders, be placed on a par with him. The "outpouring" of the Mongols and of the military triumphs of Genghis have been described by Gibbon in his immortal "Decline and Fall." It is recorded in history that the Mongols penetrated as far West as Austria in the 13th century, Burma was invaded and conquered by the Mongols who advanced as far south as the neighbourhood of Pegu. The Mongol conquests during the 12th, 13th and 14th centuries affected not only the greater part of Central Asia, but also Eastern Europe. It is hence not surprising to learn that traces of Mongolian blood have been recently found in Northern Italy. In the *British Medical Journal* Epitome 2nd December 1911 the following notes have been recorded under the title "Mongoloid Macule"—"Consiglio (La Pediat, July 1911) under this title describes those curious pigmentary stains, usually of a bluish colour, which are sometimes seen on the facial or gluteal region of infants. The condition was supposed to be a special peculiarity of Japanese babies. Apparently it is not confined to the Japanese, for out of 1,457 children seen in Parma during last year the author was able to find 32 who showed these pigment stains, and he gives diagrams illustrating the site and size of the spots in each case. In colour they vary from a distinct blue to various shades of blue and violet. They do not disappear on pressure and may fade off into the healthy skin, or end abruptly in sharply defined lines, they may appear as discs, streaks or dots of pigment. In any case they usually disappear in later life. As to their ethnology, the author takes the view that they are probably atavistic, and due to some distant Mongolian admixture and he points out that in the 15th century a large trade was done in foreign slaves. For example, Venice alone imported every year 10,000 persons of every

race It has been suggested that these spots are abortive cases of spina bifida'

Consiglio's interesting observations confirm the opinion expressed by Heri Bealz that these pigmented patches are an important anthropological test It is noteworthy also that this hereditary marking has persisted through so long a period as nearly five centuries It would be interesting to know to what extent, if any the other Mongolian characteristics were traceable in the children who were born with the blue marks It is quite possible that British children may also be found with these marks which may similarly point to some near or distant Mongolian ancestor

In my opinion the spots do not in any way point to an abortive spina bifida The spots and patches occur not merely in the region of the spine, but in other parts of the back sides, abdomen, etc By no stretch of the imagination could these be regarded as abortive cases of spina bifida During 18 years service in Burma I do not recollect ever seeing a single case of that disease In the Myaungmya District, as has been stated before, the patches are found on at least 90 per cent of infants, and yet not a single case of spina bifida has been seen The condition appears to be equally rare in China and is not even mentioned by Jefferys and Maxwell in their *'Diseases of China'* The blue marks first described by Heri Bealz appear to be merely a hereditary Mongolian characteristic and are a valuable test in anthropology There is still a large field for investigation in this subject in Burma amongst the various tribes that inhabit this interesting country

INSANITY IN THE ANDAMANS

By J M WOOLLEY, M D (CANTAB) D P H

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It is now many years since the asylum for mental cases among the Andamans convicts was established in the central part of the Settlement known as Haddo This is an institution complete in itself, and has as attendants convicts of approved conduct, who are selected for the work, and prove themselves very capable workers The asylum, which is for males only, differs from Indian buildings of the same kind in that it has no enclosing walls, but is surrounded by fields and gardens in which gangs of lunatics, whose condition allows of it, are given labour, which is an important factor in keeping them in a healthy bodily condition The asylum petty officers number one to every five inmates, and the lunatics are thus well looked after, so that escapes are rare, and serious violence very seldom occurs There are always a certain small number of cases which cannot be sent out of the asylum, but remain in

the cells—here again supervision is good, and forcible restraint is but rarely required

As regards the number of the inmates, one important fact must not be overlooked, namely, that insane convicts who have finished their 20 or 25 years, whatever their sentence may be, and are at the time in the asylum, are not released until they become sane enough to look after themselves, and travel to their homes, which naturally means that many of them are never released at all This necessary rule has a cumulative effect as regards certain chronic cases, they cannot be released, so stay on, most of them in a more or less demented condition, so that the actual number of inmates is higher than it would be if they ceased to be included when their ordinary term of transportation ended, and this accumulation of over time cases, so to speak, has to be considered when the incidence among the total number of convicts is being calculated

The asylum as above described contains accommodation for males only As regards females, of whom there is a very much smaller number of convicts in the Settlement, some 700 only with over 12,000 males, the insanes, when they occur, are incarcerated in the Female Jail—and from time to time are returned to Indian asylums regardless of the period of their transportation sentences that remain unexpired The result is that at times there are no female lunatics at all, at others some 3 or 4 awaiting return to India Calculation of the proportionate numbers of women insanes thus becomes somewhat difficult, but making a careful estimate for the last seven years, a number is arrived at which may be taken as approximately correct

The Andamans figures for insanity are as follows—

Incidence of insanity among male convicts, 114 per mille

Incidence of insanity among female convicts, 129 per mille

Of recent years much greater care has been taken than was the case formerly as regards the selection of convicts for transportation All the prisoners thus sentenced in Indian Courts are not sent, but only those who are healthy and robust, and likely to withstand the climatic change, and to become fitted for hard labour in the Settlement This has been rendered necessary in consequence of the high sick and invalid rates which used to prevail when less discrimination was used in Indian Jails, and all and sundry, provided they were not actually ill at the time, were sent away from India The age limit has also been lowered from 45 to 40 years If any doubt is to a convict's fitness, mental or physical, for transportation, prevails in his original provincial Jail, he is detained until the matter is settled one way or the other, and even then, when pronounced fit to go, a further board is held before embarkation from the presidency town The result of these precautions is that an inspection of convicts on their

and it shews, is a very general rule, a fine class of men. This matter has been mentioned here as it has a certain bearing on the significance of the figures above quoted, viz., the insanity rate of 11.4 per mille—it means that the individuals from whom these figures are obtained are in good health mentally and bodily when they leave India—they are selected people, from whom all doubtful persons have been eliminated.

If it were possible to arrive at an approximately correct estimate of the incidence of insanity in India by taking the aggregate of the numbers confined in the various Provincial asylums, some idea might be at once obtained as to the relative mental condition of the Andaman convict population. It is a remarkable fact, however, that in the whole of British India and Burma there are but 5,000 odd lunatics in the various asylums. This remarkably low number forms admittedly but a small part of the total number of insanics in the country, and it is at present, at any rate, impossible to obtain any accurate figures on the subject. There are many reasons why this should be so—the masses of the population have yet to learn the advantages of sending insane persons to asylums. This is the exact opposite to the state of affairs in England—where those certified as insane are almost invariably sent away to some institution, the County asylum as a rule, private asylums in the case of people with means to do so. Indeed there is no alternative in most cases—however loath parents may be to part with children afflicted in this way, it is generally recognised that the asylum is after all the best place for them, as owing to the comparatively high standard of education necessary to enable a man to earn a living, such persons can never be wage earners, clothing, feeding and housing are expensive and the necessary attendance at home is not obtainable, thus it comes about that in the vast majority of cases the mentally afflicted must be sent away. The number of insanics confined in their houses is negligible as only rich people are able to afford this, owing to the expense of the necessary nursing and attendance. In India, however, the state of affairs is different. The cost of housing, clothing, feeding, etc., is much less, the conditions of living are much simpler—many certifiably insane people may be of use in agricultural places for simple work in the fields, which requires no high degree of intelligence, whereas such persons would be useless, and indeed a hindrance to other members of their families in the crowded cities of Western nations.

Again in India there is a deep-rooted objection to sending insane people away from their homes, and there appears to be a more sympathetic attitude in the East towards weak-minded persons. They go about unmolested, and get fed and clothed, somehow or other, in fact they seem to experience much kindness from others generally. It may be that there is a kind of religious obligation to do this, anyhow it is generally the case,

although there may be less in it than appears at first sight, is owing to the warm climate there is very little of the housing and clothing problem, and a bare sufficiency of food is not difficult to obtain.

As matters stand at present, then, the 5,578 total number of insanics in the Indian asylums represent but a very insignificant fraction of the total number of insane people in the peninsula, and for purposes of comparison must be disregarded altogether.

There is, however, another class of lunatic confined in Indian asylums, namely the criminal lunatic—these insanes number 1,605 in British India, and must, from the nature of the case, give a much more reliable figure than in the case of ordinary lunatics—they have been guilty in nearly all cases of violent crime, and their insanity being apparent at the time of trial, are sent to asylums as criminal lunatics. In such cases the evidence usually shews that the accused had all along been known by his neighbours to be an eccentric person, and the procedure in the case is usually simple enough, the individual being recognised as a dangerous person, best removed from the community in which he lives.

Undetected crime is common in India. This is not surprising when the enormous population is considered with its small police force. But slight value is placed on human life, especially in some districts, the frequent occurrence of crime renders it less abhorrent to the people, as they become more familiar with it. The deliberate way in which it is often planned, and the facility and ingenuity shewn in concealing or disguising its true nature, are well known.

But the criminal lunatic is in a somewhat different position to the ordinary criminal, and usually finds his way to an asylum. It is not worth any one's while to take action otherwise, especially in serious cases. Hence it may be said that the 1,605 criminal lunatics in Indian asylums may be regarded as a figure worthy of notice, and one at any rate very much nearer the true state of affairs than the figure for lunatics alone. As to whether it represents the approximate number of criminal lunatics in India, would appear doubtful. The probabilities are that it is a minimum figure.

The following table gives some figures of interest—

	Lunatics	Criminal lunatics	Population
England and Wales	1,33,000	1,100	30,000,000
India	5,578	1,605	250,000,000

If it is allowable to calculate a proportionate number of lunatics, taking the number of criminal lunatics as a basis, and regarding the English figures as reliable, there would be some 200,000 lunatics in India. This assumes that the proportions between criminal and non-criminal

insanes are similar in the two countries. This number, then, 200,000, can only be regarded as a possibly approximate estimate, depending as it does on certain factors about which there is no certainty. However if it be accepted for the time being, and taking the population of British India (excluding Native States) as 250 millions an insane rate of 8 per mille is arrived at.

What is the incidence among the transportation convicts? 11.4 per mille, a figure 14 times higher than this.

The extent to which lunacy prevails in England is normally considered to be regrettably high—the present estimate is 3.6 per mille—so that the transportation rate exceeds even this figure, being nearly 4 times as high.

When the vast differences in the conditions of life are considered as between Western and Eastern, the former with the stress, competition, ever increasing struggle for existence, and varying vicissitudes that enter into the every day life of the vast majority of the people, the latter leading their monotonously regular life, an open agricultural existence of the simplest nature, forced by their poverty to abstain from luxuries of all kinds, an existence indeed in which none of the usually recognised causes of insanity are to be found, it becomes a somewhat remarkable instance that in Indian community should be found, in which the rate of insanity is as high as this, viz., 11.4 per mille. There is this, however, about it, that if the insanity rate is out of the ordinary, very much so also is the convict community one out of the ordinary, containing as it does dacoits, incorrigible thieves, and every kind and condition of murderer, as well as other serious types of offenders, and it cannot be considered as very surprising if among so large a number of persons whose conduct and actions have placed them in a class apart from their fellow creatures, a certain number, higher than the normal, should be found in whom some or other mental disability manifested itself.

The following tables shew the extent to which the varieties of insanity prevail in (1) the Andamans and (2) in Indian Asylums.

(1) ANDAMANS

Idiocy and Imbecility	Epileptic Mania	Mania	Melancholia	Dementia	Delusional Insanity
47	62	445	125	141	18

(2) INDIAN LUNATIC ASYLUMS

Idiocy	Epileptic Mania	Mania	Melancholia	Dementia	Delusional Insanity	Mental Stupor, etc
51	45	476	176	173	42	37

A comparison of these figures brings forward one very interesting and significant point as

regards the incidence of Delusional insanity. Whereas in the other columns the types of insanity mentioned show more or less similar figures, a great difference is seen as regards column VI, Delusional insanity, and a fairly well marked one in column IV, Melancholia.

In the Andamans delusional insanity actually comes next in frequency to mania, whereas in Indian asylums, as elsewhere, it takes a much lower place on the list.

Delusional Insanity then, or Paranoia, the most dangerous of all varieties of insanity, is between 4 and 5 times as common among transportation insanes as it is among the inmates of Indian asylums. Epileptic mania also, although efforts are made to prevent the transportation of epileptics, makes its appearance subsequently, and it is the occurrence of these two varieties of insanity in the first table, comprising together nearly 25% of the total number of cases, that makes the convict list much the more formidable of the two.

The convict population, then, is peculiar in the following respects—insanity is more prevalent, and the varieties that occur are of a more dangerous type. Considerable attention is paid to the management of the Lunatic Asylum, and it will be seen from the above remarks as to the nature of the cases lodged there, that this is an essential matter, concerning as it does the general safety of the people among whom convicts work. Were it not so, it is probable that more cases of unprovoked murder or violent assault would occur. Fortunately for the community, it usually so happens that a convict who is becoming insane is noticed by his comrades to be behaving in a peculiar manner, and no time is lost in sending him away to a hospital. The peculiarity noticed is usually that he becomes of a morose or sullen mood, and is unusually quiet, and refuses to work, so the petty officer (a convict), in charge of the gang, gets rid of him as soon as possible. Supervision by these convict petty officers is often very indifferent—for instance certain sick convicts, who should undoubtedly be in hospital, are at times hidden away and hang on in barracks in the hope of getting well, often because going to hospital would mean the loss of some congenial employment to them, and at this the petty officers, being interested persons, may, undoubtedly, often connive. But such considerations do not apply in the case of a man who becomes peculiar in the head. Such are sent off pretty soon—there is no reason why they should not be—neither petty officer nor man has anything to lose by it, and, as a matter of fact, such a morose individual who will not work is a nuisance to his gang in many ways, and may run away, and get the petty officer into trouble, etc., at any rate the fact remains, no time is usually lost in getting such a person under proper observation, which is best for him and every one concerned, for it is not infrequently seen that shortly after his incarceration in the

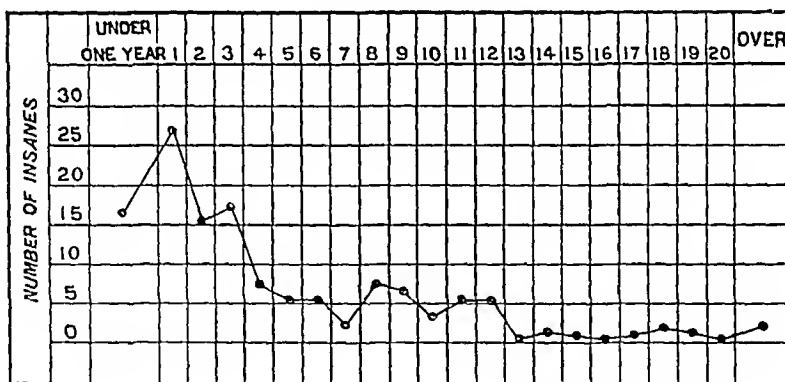
asylum, his form of madness takes a much more tangible and acute form, which might have rendered him exceedingly dangerous had he remained behind in his former gong. There are certain other facts of interest in connection with the occurrence of lunacy here. One of these is the time, after transportation commenced, that symptoms of insanity first manifest themselves. In this connection it may be remarked that the majority of convicts have to put in about 20 years in the Penal Settlement. There are, it is true, convicts sentenced to terms of transportation only, such as 7 or, 10 or, 14 years, but on the other hand these are more than outnumbered by dacoits whose sentences are usually 25 years (dacoity with murder being looked upon as a more heinous offence against society than murder), and in addition to these there are those irreconcilables who are not released at all on account of continued bad conduct in the Settlement, and others belonging to certain Native States who are not allowed to return, not being wanted by the rulers there, also certain others, such as lepers, etc., who are not allowed to return to India. To say that the average convict has to remain some 20 years is a fair estimate, and it is shewn that it is the earlier years of transportation that produce the largest number of insane convicts

of normal mental habit. Still it is as well to note that it does not occur, but that the great majority of the insanes are obtained from those undergoing the early years of their sentences.

This fact is an interesting one, and throws some light on the mental history of these convicts, who although they arrive in the Andamans in a healthy mental state, yet become insane within a year or two. An important document arrives with each new batch of convicts from India, the Nominal Roll. Of late years, the information given opposite each man's name is much fuller than it used to be, and an enquiry is made and entered by the police into the antecedents of the criminals transported. Regarding convicts who subsequently become lunatics, it is of interest to see what kind of characters these people had at the time of their trials, and a reference in recent cases to Nominal rolls gives this information. Entries such as the following are seen—

- 1 "An unreasonable and excitable man, committed the murder in a mad frenzy"
- 2 "Had delusions at the time of trial"
- 3 "Suffered from mania on previous occasions"
- 4 "Intractable temper and very low order of intellect"

CHART SHOWING PERIOD OF IMPRISONMENT AT WHICH
INSANITY APPEARS



For instance some 61.6% of the total inmates of the asylum became insane during the first 4 years of transportation. This is shewn in the above chart. In connection with this chart the interesting question comes to mind as to whether certain forms of imprisonment bring about insanity on account of the severity of the system as practised in certain places. It is stated as a fact that long continued solitary confinement of a Cellular nature does bring this about—were this the case in the present instance, however, we should look for a rise in the curve as the years passed, but no such rise is seen—indeed the system is so lenient, and is thus so far removed from certain others in which the reverse is the case, that it is not in the least calculated to bring about mental derangement in prisoners who are

5 "No motive-evidence of petit mal (epilepsy)"

6 "Murdered his father, an old blind man, for the simple reason that he stumbled and fell against his cot in the dark"

7 "Hot tempered and eccentric. Mad once frequenter of ganja and toddy shops"

Such are specimens of the previous mental history of many lunatics, indeed the number shewing such unsatisfactory entries against their names is unusually high—it may be said that they number some 66% or two-thirds of the lunatics.

The presumption is that very many of the cases of insanity that occur are instances not of first attacks, but of recurrent insanity, being merely a re-manifestation of what has occurred on previous occasions in the prisoner's lifetime.

This being so, we are in a position to dispose at once of any idea that it is the severe nature of the punishment of transportation that causes men to become insane. It is true that the sickness caused by unhealthy seasons is at times very high, and thus may, and probably does, act as a factor in undermining the health, and so perhaps sometimes precipitating an attack of insanity in one who is of a psychasthenic nature, or who has had previous periods of insanity on former occasions, and in whom, therefore, there is a liability to recurrence, any debilitating illness would tend to predispose in that direction.

RELATION BETWEEN INSANITY AND MURDER

As many as 91.8% of the convict lunatics have been sentenced for the crime of murder, or one of its allied sections.

But 91.8% does not represent the proportion to other criminals of those who are murderers. These constitute a considerably smaller portion of the convict community, *viz.*, only some 59.6% so that it becomes evident that the crime of murder is more often associated with a psychopathic tendency than are the other offences, which is not surprising when the nature of the offence and the circumstances under which many murders are committed is taken into consideration.

The conclusions arrived at from the above considerations may be taken as follows—

1. The Andamans convict figure for lunacy of 11.4 per mille may be considered a distinctly high one.

2. Among the varieties of insanity occurring among convicts, Delusional Insanity (paranoia), is unusually prevalent.

3. Insanity is considerably more frequent among murderers than among other convicts.

4. It is highly probable that the insanity, such as occurs, is in many cases of a recurrent nature, and not due to any severity in the penal system.

CASES OF HYDATID CYST

By THOMAS JACKSON,

MAJOR, I M S,

Civil Surgeon, Ahmedabad

DURING the past fifteen months I have come across five cases of hydatid cyst, the notes of which I give below.

These are the first cases I have seen in India. It would be interesting to know if any readers of the *Indian Medical Gazette* have met with cases of hydatid cyst recently, and how many.

Judging from these cases coming from places so far apart as Karachi, Lucknow and Ahmedabad, the disease is widespread, and an important question arises, *viz.*, is the disease becoming more prevalent, and if this is so what steps should be taken to stamp out the disease.

I am indebted to Major H. Bennet, I M S, Civil Surgeon Karachi for the notes of the case

No. 5, and to Lieut. Binning, I M S, 7th Rajputs, for the notes of the case No. 4.

There is some doubt as to whether No. 5 was a hydatid. It might have been a sterile cyst.

Name, A. wife of N., sex, female, age, 45, caste, Musalman, place of residence, Karachi.

History—She lived on vegetable food mostly, but sometimes took meat. The patient said that the duration of the disease was eighteen months.

On admission the patient had a swelling of the right eye of the size of an apricot. The eyeball protruded and was turned inwards, and a tense tumour could be felt. She could not properly distinguish objects, but they could be better distinguished on the left side of the eyeball than on the right side. She could make out day from night. Her appearance had become ugly from the protrusion, and it was for this reason that she came to the Hospital. She wished to have her eye removed.

On examination it was found the eyeball was carried forwards by a cystic tumour.

Operation—The patient was put under chloroform on 24th January 1911, and the outer canthus was incised and then the tumour was punctured, carefully avoiding the eyeball. Clear fluid escaped, which, on microscopical examination, showed the remains of hooklets. The cyst was probably formed in Tenon's capsule. After puncturing it contracted so much it was found impossible to remove the parenchymatous layer. The cavity was scraped with a Volkman's spoon and irrigated with a weak H. P. lotion. The fluid collected again, and on the 3rd February a second incision was made and the fluid evacuated. The patient left the hospital on the 7th February 1911, to go to her village. She had a good vision, but the eyeball protruded a little. This probably subsided as she did not return to the Hospital.

Name, P. K., sex, female, age, 20 years, caste, Native Christian, place of residence, Ahmedabad. Date of admission, 2nd October 1911.

Previous History—For four years she had been suffering from liver trouble. On admission there was a large cystic tumour of the right lobe of the liver. Hydatid disease was suspected.

Operation—On the 9th October 1911 laparotomy was performed. The cyst proved to be a hydatid cyst. The cyst was emptied of its contents as well as the parenchymatous layer and the cavity drained. A sinus remained and persisted for a long time. The patient was discharged cured on 12th January 1912.

The contents of the cyst on examination microscopically showed the remains of hooklets.

Name, B. K., age, 33 years, sex, male, caste, shoemaker, place of residence, Ahmedabad. Date of admission, 13th September 1911.

History—A vegetarian and not addicted to alcohol. He had not suffered from previous dysentery or diarrhoea. Fifteen years ago he suffered from pain in the liver region which subsided after banding. Two months ago he felt pain in the liver with rise of temperature, difficulty of breathing and slight cough.

Condition on admission—There was great increase of liver dullness and fluctuation was distinctly felt. His temperature was 101° F, pulse 120, weak and small.

Operation—On 16th September 1911, he was operated on and two large hydatid cysts of the liver were found, one in the left lobe and the other in the right lobe. The cavities were cleared of their contents and the parenchymatous layer and well irrigated with saline solution and drained. The cyst of the left lobe was normal in appearance and the walls contracted nicely after operation. The cyst in the right lobe had suppurated. Two ribs were excised to allow the walls to contract, but notwithstanding this a large cavity remained and the discharge was profuse.

The patient died of exhaustion on 18th September 1911.

In this case, the cyst in the left lobe was probably an exogenous cyst formed from the cyst in the right lobe.

Name, B S, age, 20 years, sex, male, occupation, sepoy, place of residence, Lucknow District. Date of admission, 5th January 1912.

Previous History—Had an attack of dysentery $3\frac{1}{2}$ years ago, which continued off and on, for four months. Three years ago he noticed a swelling of the abdomen in the right hypochondriac region. The swelling appears to have increased extremely slowly and finally seems to have extended about three fingers breadth below the ribs. About 1 year after the onset of this condition, he underwent treatment in his own village, and in two months' time there was a complete disappearance of the condition.

26th October 1910 to 7th December 1910, he had a severe attack of dysentery, during which an abdominal swelling appeared in the right hypochondrium and has since been continuous.

Condition on admission—In the right upper quadrant of the abdomen there is a distinct tensely cystic tumour. It is slightly tender to pressure. The lower border is a hand's breadth below the costal arch. Palpation gives an indefinite sense of fluctuation.

Operation—At operation the condition was found to be a hydatid cyst of the liver, affecting its right lobe. Recovery good.

Name, S Z, sex, male, age, 11 years, place of residence, Karachi. Date of admission, 8th March 1912.

History—The duration of the tumour was said to be of one year. It was very small at the beginning, but gradually increased to the present

size of a mango. It was not painful for nearly six months, but after that time the boy used to feel pain in the abdomen after meals.

His food consisted of rice, dal and meat. He had dogs in his house and frequently the dining plates were put outside for the dogs to lick them. He cannot attribute the reason of the tumour to anything.

There was nothing special about the family history.

On admission a movable tumour about the size of a mango in the hypogastric region could be felt. It could also be seen. It could also be raised a little. Fluid was suspected in the sac.

Operation—The boy was put under chloroform on 11th March 1912, and an incision $2\frac{1}{2}$ " long was made below the navel in the middle line. It was deepened, the tumour was seen as reddish in colour, to make sure of the diagnosis a trocar was passed in and clear fluid came through. The tumour was attached by pedicles to the small intestines and bladder. These attachments were dissected and the tumour was pressed out of the abdomen the main attachment being ligatured and excised. Deep sutures were taken with silk and the abdomen was finally closed with silk-worm gut. The fluid was watery. Sp G₁ 1007, slightly albuminous, no hooklets were seen under the microscope. The tumour was opened and another white sac was seen inside which was somewhat jelly-like.

AN INTERESTING CASE OF MULTIPLE HYDATID ECHINOCOCCAL INFECTION OF THE ABDOMINAL VISCERA

By T. S. FIRMURIL, M.B.,

Pathological Laboratory, Medical College, Madras

Patient's name—Thammiah, age 55 years, Hindu, male, occupation, owner of a coffee estate, place of birth, Coorg, residence, Sidhappur, duration of illness, 8 years. Admitted into the General Hospital, Madras, on 12th November 1911.

History—The patient's complaint was swelling of the abdomen, pain in the pit of the stomach and around the navel and difficulty of breathing. Eight years ago the patient noticed first a small swelling in the hypogastric region with pain radiating towards the umbilicus, then a swelling in the left hypochondriac region which gradually increased in size, extending downwards and towards the umbilicus. Two years ago he noticed another swelling in the epigastrium, which rapidly grew in size. During this whole period he suffered from irregular intermittent fever, though for the last three months he was having fever daily. He had oedema of both legs for the last five years and dyspnoea appeared two years ago, when the oedema became worse. Fluid began to

collect in the abdomen since the tumour rapidly increased in size. He was tapped twice at the Mercer local hospital. The day after his admission into the General Hospital, 238 ounces of blood-stained fluid were withdrawn from his abdomen by paracentesis.

The patient is usually constipated. He was a strong, healthy, well-built man eight years ago, but was gradually reduced in weight since the appearance of the tumour in the abdomen. He gave a history of syphilis and gonorrhœa, acquired twenty years ago, and of alcoholic and sexual excesses for a long time. He kept nearly half a dozen dogs at home. Except for the fact that his father died of a similar form, big tumour in the abdomen with œdema of the lower extremities, there was nothing noteworthy in the family history of the patient.

EXAMINATION

Inspection—He was a fairly well-built old man, weighing 120 lbs after paracentesis. The face was sunken and pale, tongue clean and moist, conjunctivæ pale. The lips were bluish-black, nails pale, respiration was laboured, chest contracted, ribs were prominent, abdomen was distended, scars were present below the umbilicus, results of repeated paracentesis, femoral and inguinal glands were enlarged, firm and shotty, the skin of the legs was pigmented.

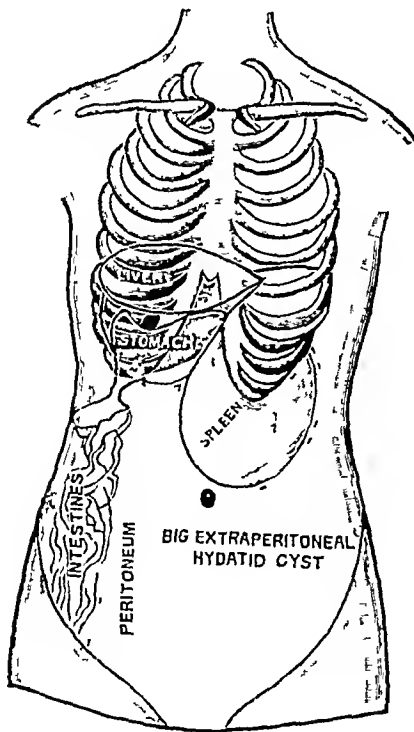


Diagram showing the stripping up of the peritoneum to give place to the enlarging hydatid cyst, the liver pushed up the stomach and intestines displaced to the right half of the abdomen and the enlarged spleen projecting into the cavity of the main cyst.

Palpation—There was felt a firm nodulated tumour situated in the right hypochondriac, epigastrie, umbilical, left hypochondriac, left

lumbar and upper half of the left iliac regions. A groove was felt running from the eighth left costal margin downwards to the umbilicus in a curved direction with the convexity to the right.

Percussion—The abdomen was dull all over. Thrill due to the presence of fluid in the abdomen was obtained by laying one hand flatly on one side of the abdomen and sharply tapping the other side with the fingers of the other hand. The liver area could not be marked out until the patient was turned on his left side. The liver was found pushed upwards to the fourth right intercostal space in the parasternal line and the sixth in the posterior axillary line. The spleen was enlarged and its dullness commenced from the fourth left intercostal space and merged below with the abdominal dullness. The area of the stomach could not be marked out. The lungs were hyperresonant as far as the fourth intercostal space anteriorly and the sixth posteriorly. The rest of the chest was dull.

Auscultation—Breath sounds and vocal fremitus were normal. The first sound of the heart was weak, the second sound accentuated in all the areas. Hæmic murmur was prominent in the first left intercostal space.

The blood examination showed leucopœnia with relative mononucleosis, but there was no eosinophilic increase.

The digestive system was quite normal.

Diagnosis—Considering the long duration of the illness, its rapid growth for the last two years, the presence of blood-stained fluid in the abdomen, the firm lobulated feeling of the tumour, the gradual loss of weight, a benign tumour of the abdomen which had later on taken malignant characters was suspected. Evidently the tumour was not one connected with the stomach, duodenum or intestines, as there were no disturbances of the digestive functions. As no urinary symptoms were present, also tumour of the kidney was excluded. So, tumour either retroperitoneal or in connection with the spleen or liver, which assumed malignant characters later, causing pressure in the portal circulation with consequent ascites, and later on œdema of both legs by pressing on the inferior vena cava was the best provisional diagnosis that could be given after examining the patient. But Captain E. W. Browne, I.M.S., who was in charge of the case believed in the possibility of its being a big hydatid cyst of the abdomen, though no typical hydatid thrill was obtained, especially after eliciting the history of the patient's intimacy with his half a dozen dogs. So, he thought an exploratory operation advisable, which was accordingly done.

Operation Notes—There was an enormous cyst completely filling the abdominal cavity and extending from above the front of the spleen and liver right down into the pelvis below and to the flanks on either side. It contained numerous smaller cysts, but it was impossible to dissect

out the walls of the cyst as they were so widely adherent to all the structures. One of the big cysts inside the main abdominal cyst was incised, and this was found to be an enlarged spleen bulging into the cavity and so it had to be plugged with gauze.

Post-mortem Notes—There was an operation wound of the abdomen about 6 inches in length, the upper 4 inches of the wound were stitched, the rest left open, and through that opening a drainage wick gauze was inserted.

On opening what evidently looked at first sight to be the abdominal cavity, a very thick walled hydatid cyst was found containing a large number of daughter and grand-daughter cysts with large flakes of a pultraceous greenish material which was the granular layer of the cyst wall, but none of the abdominal viscera could be seen. The thickness of the cyst wall was nearly half an inch. On continuing to open the cyst, it was found to be in front of the peritoneum to which it is firmly adherent throughout.

Into this large main cyst, projecting from the left side to the middle line and filling up the left upper half and more of the abdomen, there was a large smooth firm tumour covered with a dense white capsule. This, on examination, was found to be the spleen, which was greatly enlarged, and which had a big hydatid cyst, about the size of an average man's head, occupying its upper and outer part and being tightly packed with a large number of daughter and grand-daughter cysts with large flakes of the soft greenish granular layer of the cyst detached from its wall. The operation incision into the tumour had just missed the cyst wall and was found to the right of it in the splenic pulp. The cyst appeared to have originated outside the parenchyma of the spleen, but under its capsule.

As the main cyst was completely extraperitoneal and filled nearly the whole abdomen, the stomach and intestines were enclosed in a comparatively small bag of peritoneum beneath the liver and in the right half of the abdomen. The stripping of the peritoneum to give place to the enlarging cyst and the true peritoneal cavity, as found on *post-mortem*, can be seen from the appended diagram.

The liver was enlarged, the right lobe was indented above by the pressure of a cyst, about the size of a hen's egg, situated beneath the diaphragm, four smaller cysts were found in the substance of the liver. The thick white walls of the liver cysts collapsed as soon as they were opened, and were very easily detachable from the liver parenchyma.

The mesentery and omentum contained a large number of very small intraperitoneal cysts. The kidneys were markedly embotic, but had no cysts in them. Stomach, intestines, lungs and heart were free from them. As the patient presented no cerebral symptoms, the brain was not examined.

MACROSCOPICAL AND MICROSCOPICAL EXAMINATION OF THE CYSTS

Altogether there were about 500 cysts of varying sizes from that of a pea to that of a fist. Nearly all of them were rounded, while a few were oval and had constrictions here and there, distorting their regular contour by fibrous bands. But typical racemose hydatids were not seen. The walls of most of the cysts were thin and transparent, but some had thicker translucent walls, while a few had firm thick white fibrous smooth walls, resembling the shell of a hen's egg in appearance. Most of them contained a clear transparent fluid, though some of them had a turbid fluid inside with small flakes of the detached granular layer in all probability. Two cysts contained a faintly reddish fluid, probably resulting from admixture with serum, by their getting inflamed. None of them were suppurating. I cannot account for the presence in two or three of fairly big cysts of a fluid tinged with a light greenish colour. It was possible only in a few of the cysts to demonstrate microscopically a few undeveloped scolices of the brood capsules of the hydatid echinococcus, though the fluid in many of them contained small hooklets. I collected the hydatid fluid from some of the clear cysts, filtered it and tested the clear fluid. The specific gravity was 998 as shown by the urinometer and so lower than that of distilled water. But Leuckart and other authors give it as 1000 to 1016. They are of opinion that the reaction of the pure hydatid fluid is neutral. But I found it to be very faintly alkaline to litmus, but distinctly so to phenolphthalein. Moreover it is said that it does not contain albumen, but I got a thick precipitate of albumen by treating it, by the addition of fuming nitric acid to it and by testing it with 5% potassium ferri-cyanide solution and a few drops of glacial acetic acid. Liquor potissæ gave a slight milkiness with it. By the addition of a solution of silver nitrate, there was a thick immediate precipitate of silver chloride, demonstrating the presence of a fairly large amount of chlorides. In the Fehling's test the copper sulphate was reduced showing the presence of some reducing substance, but as the cysts were in formalin solution for some time before I washed them in water to collect the hydatid fluid, it is just possible that there might have been a faint trace of formation to reduce the copper sulphate. It is also very probable that the different reactions of the hydatid fluid in this case is due to my having tested it nearly six hours after the death of the patient.

CONCLUSION

I am of opinion that in this patient at first the hydatid cyst developed in the hypogastrie region in front of the peritoneum covering the anterior abdominal wall, and gradually increased in size to fill up nearly the whole of the abdomen, and that, subsequently by repeated fresh infection,

vesicles appeared first in the spleen, which was felt by the patient as a gradually enlarging tumour in the left hypochondrium, growing downwards and towards the middle line, and then in the lower and omentum. Though different environments may have different effects on the growth of the hydatids, the vesicles in this patient, being of varying sizes and stages of development, are probably the result, not of a single infection, but of repeated ones over a long time.

Cases in which abdominal hydatids have been mistaken for extraintestinal gestation, ovarian cyst, cystic renal disease, various tumours in connection with the abdominal organs and bones of the pelvis and diaphragm from other causes, have been recorded by Lenckart, Cobbold and others. So, in patients with abdominal tumours, especially whenever anomalous symptoms are present, unless there are strong contra-indications, suspicion of the possibility of hydatids must be entertained, as is seen from the account of this case.

I have to thank Captain E W Brown, I M S, for having kindly permitted me to record this case.

A Mirror of Hospital Practice

A PECULIAR FEVER MET WITH ON N-W FRONTIER

By JAMES HUSBAND, FRCS ED,

CAPTAIN, I M S,

AND

H V HODGE,

LIEUT, I M S

In the course of the last two years we independently have had our attention drawn to several cases of continued fever among sepoys on the North-West Frontier, in which we have failed to come to any definite diagnosis and have been forced to fall back on that unsatisfactory term in our nomenclature—Pyrexia of Uncertain Origin.

We have shown several of these cases to our medical brethren in consultation. We have met some who have little doubt that they belong to the enteric group of fevers, others again have suggested tubercular fever without manifest lesions, others hepatitis, and so on.

There are, however, features which we shall describe which suggest in our minds the possibility of the existence of an undiagnosed fever. Possibly similar types of fever occur in other parts of India. To us then identity appears to be obscure, but even granting that they may be atypical cases of the enteric group, we venture to think that they are of interest. We have collected eleven cases, which appear to show a distinct uniformity of type both as regards the temperature curve and general clinical picture. Before

describing the main characters of the disease, there is one feature, to our minds the most notable, and one on which we base our differentiation, and that is, the almost total absence of symptoms. According to the temperature chart, the patient is suffering from a prolonged and severe fever, according to the patient he is comparatively well. The general condition of the patient is surprisingly good. He does not waste. Weakness is not marked, and he may be even hungry. One patient, in particular, frequently expressed a desire for a good meal, when his temperature was as high as 103°. At the termination of the fever, and often before, the patient is anxious to get up and walk about. Even during the most acute period it is with difficulty that the patient is kept in bed, and he will certainly sit up if there is no one to prevent him. In fine, not only is the patient free from symptoms and signs of any specific fever, but he apparently suffers less from the effects of pyrexia than in any other disorder.

Pyrexia—Fever is present from 26 to 38 days. It is difficult to give an adequate word picture of the temperature curve but we think that a study of the charts will justify our suggestion that we have possibly a separate and distinct disease to deal with. The fever is markedly oscillatory, showing no tendency to maintain a continuous level, and a very irregular, at times very marked, diurnal variation. The period of pyrexia is divided up into stages, wave-like in appearance, and suggesting perhaps a series of relapses rather than a direct continuation of the original fever. During the course of the disease there may be periods of a pyrexia lasting from one to six days.

Pulse—There is nothing peculiar about the pulse. On the whole, perhaps, it has a tendency to be rather slow in relation to the temperature.

The *Tongue* is usually furred in the early stages, but it quickly cleans and remains clean and moist. The mouth and teeth are moist and sores do not collect.

Thorax—Signs in the chest are the exception and, when found, are limited to a few moist sounds or slight bronchitis.

Abdomen—No abdominal symptoms are present. There is neither constipation nor diarrhoea. The abdomen does not become distended and there is no suggestion of tenderness. The spleen was found enlarged in several cases, but it was hard and appeared to be due, rather to former attacks of malaria, than to the present condition. The liver is not enlarged. In one case only it was palpable for a few days, and there was pain in the right side. This rapidly responded to calomel. There were no other symptoms pointing to hepatic disorder.

Nervous system—At the period of exacerbation the patient may complain of pain in the head,

back, or limbs and back. There is none of that mental torpor associated with typhoid.

In all cases a search was made for malarial parasites, but without result. The Widal reaction against typhoid and paratyphoid A and B was negative, with the exception of chart 3, which gave a reaction of one in fifty typhoid during the third week. The serum of several cases was tested against *Micrococcus Melitensis*, again with negative result.

The after-history of these patients goes to show that there are no sequelæ of any sort. This condition is not the precursor of some other pathological condition. The temperature, having finally returned to normal, the disease is at an end. Not one of these patients was re-admitted for any disease having any possible connection with the disorder in question.

As regards the differentiation of these cases, the most obvious suggestion is that they are atypical cases of the enteric group. There are to our minds points against this explanation. Firstly, only one case out of the eleven gave a Widal reaction with typhoid and paratyphoid. The exception proves little, the reaction was in low dilution, and may have been due to some former attack. Secondly, the temperature curve resembles typhoid only in one particular, its duration, but, in addition to this, surely the absence of symptoms renders the resemblance still more distant. We have seen typical and mild cases of typhoid, but never cases with such a clean tongue. It should be mentioned, however, that at the time these cases occurred, a number of cases of typhoid were also admitted to the hospital. At Fort Lockhart three of these cases were admitted, but there no case of typhoid occurred throughout the year.

The next suggestion is that the disease may be hepatitis. In this connection it should be noted that liver-abscess, at least in the Native Army, is an extremely rare, almost exceptional, condition in this part of India. We have marked in the chart of one case the exhibition of Ipecacuanha given on the grounds that the case might be one of hepatitis. The first impression was that great results were going to appear from this remedy, but on comparing this chart (No 3) with the others no appreciable influence can be discovered. Secondly, although with the above exception, none of the cases were treated on such lines, no liver-abscess appeared. The condition of the patient was not that of a patient with this disorder. He had none of the distressing symptoms of that complaint. Finally, and not the least convincing point, is that none of these cases have returned to hospital. Perhaps one of the most feasible suggestions is that these cases are short and mild cases of Malta fever. Undoubtedly, sporadic cases of Malta fever do occur in this district. The chart

certainly bears some resemblance to a page cut from a chart of a case of Malta fever. But here again there are points against it. The average duration of Malta fever is given as sixty days, whereas the average duration of our cases was just half. There were no joint symptoms and the tongue was clean. Unfortunately, the serum test was not carried out in all cases, but in those in which it was a negative result was obtained. There is no doubt that we are not dealing with an isolated portion of a long attack. The first case occurred over twenty months ago, and since then he has not reported sick.

With regard to tuberculous lesions, suffice it to repeat, that none of the patients have returned to hospital, and that, further, it is contrary to experience to meet with a series of cases of obscure tubercular lesions occurring about the same time.

This disease, appearing as it does as one in which the main, if not the only feature, is the fever, is inclined to lure one into the speculation as to whether such a condition may be due purely and simply to disorder of the thermic centre.

OBSERVATIONS ON THREE HUNDRED CASES OF GUINEA WORM

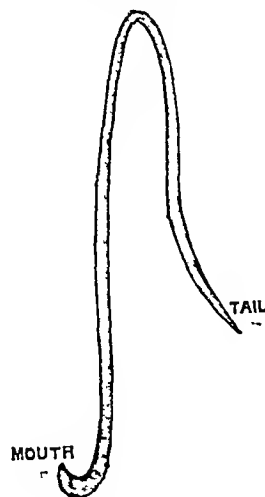
By P. E. CHITALE,

MAJOR, I. M. S.,

Civil Surgeon, Damoh, C. P.

GUINEA worm, its description, microscopic appearance, signs and symptoms and treatment. This worm is pretty common in this district.

Guinea Worm—It is a long white cylindrical worm about $\frac{1}{2}$ th to $\frac{3}{4}$ th inch thick, varying in length from 13 to 38 inches. Head end is thicker and oval. It has a triangular orifice opening in



Head end under the microscope

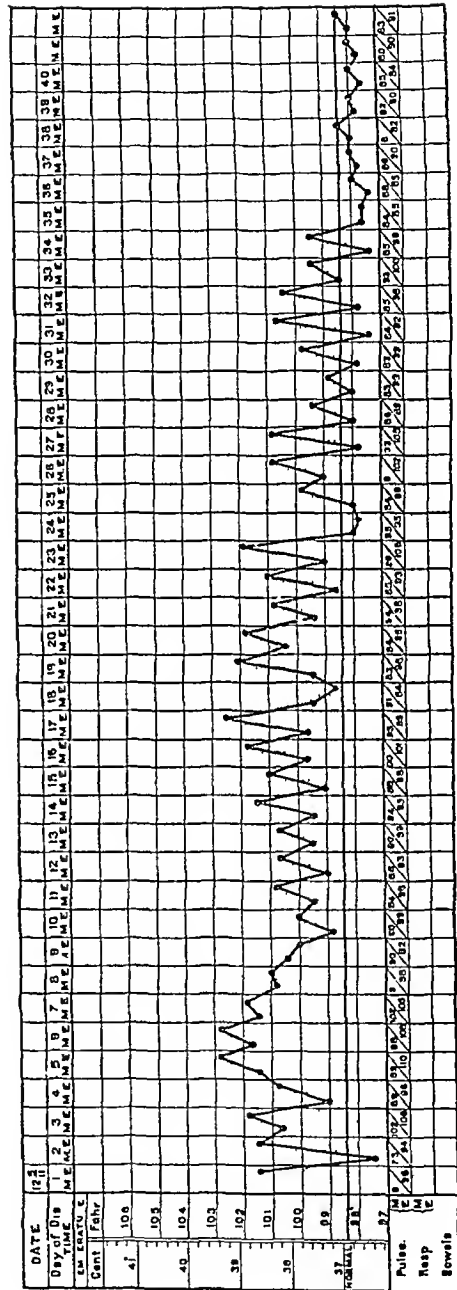
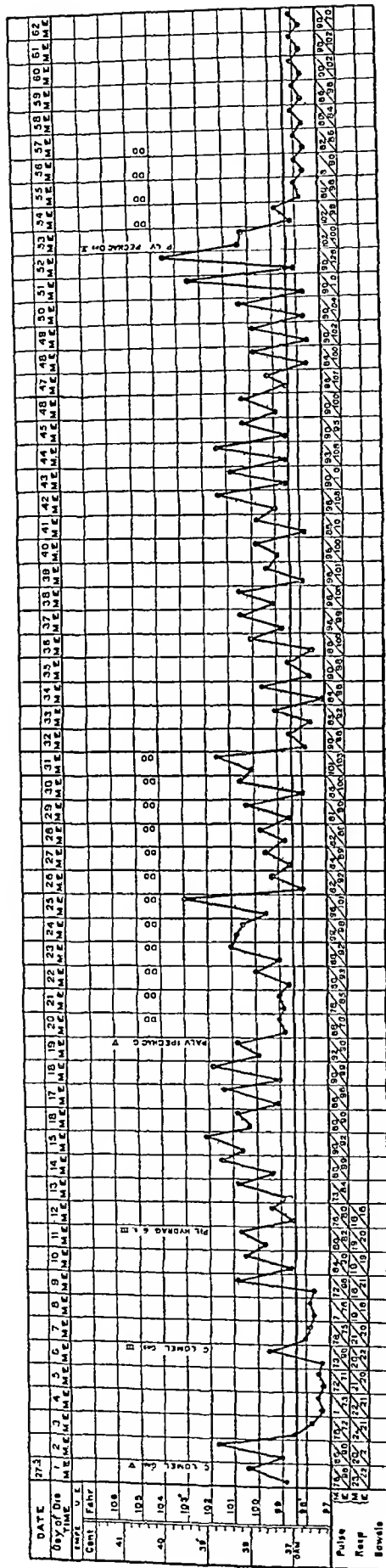
the alimentary canal which runs along the whole length of the animal and terminates near the tail. Close to the triangular orifice there are two

A PECULIAR FEVER MET WITH ON N-W FRONTIER

By CAPTAIN JAMES HUSBAND, FRCS (Ed), I.M.S.,

AND

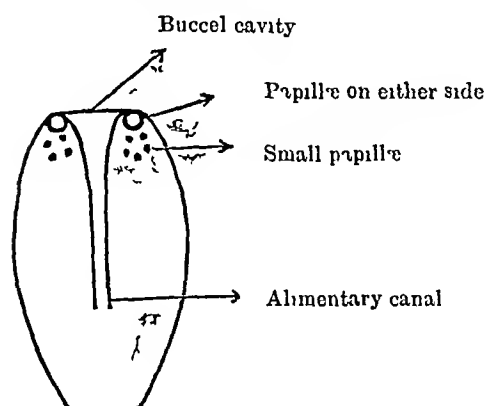
LIEUT H V HODGE I.M.S.



raised papillæ, one on the dorsal and another on the ventral surface with smaller raised dots round about, about 4 or 5 in number. In some cases this alimentary canal is pushed to one side by a tubular uterus.

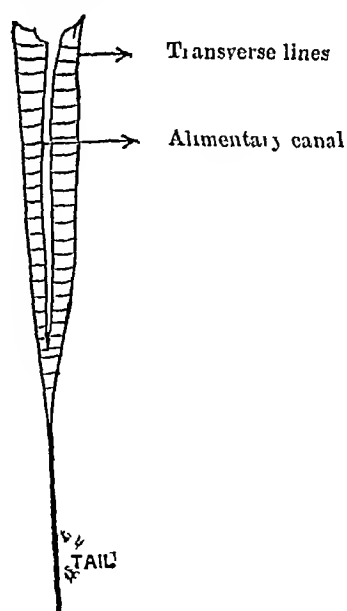
The extracted worm is generally shrivelled up, except the last few inches of her body. As found in human beings, it is generally a female.

Immature specimens are found in some cases in the skin and cellular tissue of persons suffering from this disease.



Embryos—Under the microscope they appear flattened, tapering towards the head end and have a sharply defined tail. Head end is round and has a triangular mouth opening into an alimentary canal running backwards towards the tail and ending abruptly close to it. The surface is transversely marked. Tail is sharp and narrow, showing depressions on either side.

Embryo under the microscope, triangular orifice



The embryo is active and remains alive in water at least for four or five days and shrivels up after death.

DEVELOPMENT AND SPREAD OF THE DISEASE

Guinea worm is seen generally in human beings. It is strictly confined to Damoh town and villages round about within five miles radius. In

the town this disease is traced to certain wells and tanks. Embryos of this worm remain in larval condition in particular species of cyclops, and it is conveyed to the stomach of the human beings by means of drinking water, when it is set free from the tissues of the cyclops and makes its way into the tissues of human beings and develops into a mature worm.

The water of the tank or well generally gets infected when persons suffering from guinea worm wash their ulcers in water. Many embryos escape through the hole of the ulcer and remain floating in water and eventually find entrance in the skin of the cyclops and there remain in the larval condition and enter the stomachs of human beings when the water of that particular tank or well is drunk by them.

SIGNS AND SYMPTOMS

(1) Fever ranging between 100° and 101° for a day or two.

(2) Formation of a small blister in some particular part on 3rd or 4th day, generally on the foot and ankle, often on the legs, thighs, arms and shoulders. This blister gets inflamed round about, and it breaks in a day or two leaving a small ulcer. In the centre of the ulcer there is a minute hole and from this a minute quantity of clear white fluid flows and spreads round about the hole and the ulcer.

This fluid is full of embryos. In some cases a sort of tube is seen extended through the hole which ruptures itself freeing these embryos. Sometimes the head of the worm itself is seen in the hole of the ulcer.

Complications from neglected cases—

(1) Extensive abscesses (2) Fistulæ and sloughing (3) Stiffening and ankylosis of joints. These complications generally occur when worm breaks. The disease is rarely fatal.

Treatment—Poulticing the part affected with linseed meal, night and day, to soften the tissues. When worm is seen it is rolled upon a sticking plaster little by little as it comes out every day.

If it is subcutaneous it is extracted in a day or two, if deep, in about a week. Massaging also helps to extract the worm.

The hole in the ulcer is thoroughly washed with mercuric perchloride lotion 1 in 1,000 with a view to kill the embryos.

Injection of alcohol or chromic acid inside the worm to harden it and to facilitate its extraction.

Old Sanskrit works on medicine recommend application of poultice of young sprouts of Baman tree mixed with gūi and linseed meal night and day. I find this application certainly softens the tissues much quicker and worm comes out with great ease. Other Sanskrit works on medicine recommend daily use in minute doses of the root of white oleander mixed in sugar or honey twice a day. I have treated several cases with this success, but as it is a poison and as its action is to kill the worm, it is required to be given with great caution and in minute doses.

For the prevention of the disease the wells are required to be permanganated and tanks treated with sulphate of copper to the strength of 1 in 100,000

People should be advised to use boiled water for drinking purposes and to bathe in hot water

A minute dose of Liq Aismeculis taken daily after food also prevents the disease to some extent

A daily use of issatocida along with vegetables, together with application of sweet oil to the whole body before bathing, is said also to act as a preventive

LARGE RENAL CALCULUS

By H. B. STEEN, M.D.,

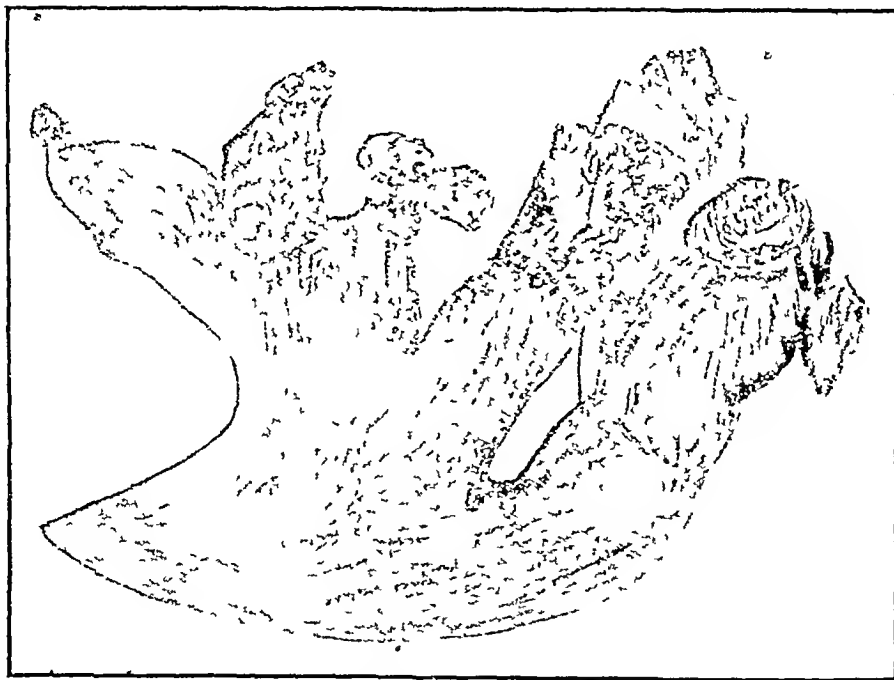
CAPT, I.M.S.,

1st Resident Surgeon, Presidency General Hospital, Calcutta

H. R., European, Railway Guard, aged 48, was admitted to the Presidency General Hospital on 14th September, 1911, complaining of severe attacks of pain in the right lumbar region. He was emaciated and micturated frequently. He gave the following history—He passed four pieces of gravel 9 years ago. In all he passed 13 stones

On 11th September the patient was operated on. The calculus removed weighed 40/ 10gr

The operation was difficult owing to the branched condition of the calculus, and it had to be broken and removed in pieces. Instead of incising the kidney I passed a needle threaded with silver wire through the kidney, and then by a sawing movement pulled the wire through. The result was very little bleeding from the kidney. This method I saw advocated in an American Journal. But for the perinephritis and my inability to move the kidney into the wound, I would have excised the kidney. It seemed after removing the stone as if there was no functioning renal tissue left. In addition to the main calculus there were several smaller calculi scattered through the organ. The kidney was drained by 3 large tubes. Immediately after operation the condition was grave, looking like an encephalus. The 1st day after operation the face was very puffy. He passed 130 oz of urine. The 2nd day he passed 135 oz, after which he gradually dropped to an average of



between 1904 and 1909. He states he passed no blood in his urine till 1910. He consulted many doctors. He had no attacks of colic after 1909, but in August 1911 he developed a lump in the right lumbar region and had burning on micturition. He was admitted to a hospital for a month, but no operation was suggested to him.

State on admission—He is emaciated. A definite swelling can be palpated in the region of the right kidney. There is a large amount of pus in the urine. The patient's blood gave a leucocyte count of 11,000 with 78 % polynuclears. The cystoscope could not be used on account of a urethral stricture.

60 oz per diem. He gained rapidly in weight. I send a photograph of the stone. The patient writes on 31st March, 1912, 7 months after operation, that he is at work, and that a small sinus still exists which does not trouble him much. The specimen was shown at a meeting of the Medical Section of the Asiatic Society of Bengal. Morris reports that he removed a calculus weighing 10 oz. The analysis of the calculus was "Calcium Phosphate only." It is interesting that the kidney, in spite of its apparent disorganization, regained its function as soon after operation. Large quantities of urine came away from the wound.

Indian Medical Gazette

AUGUST

THE ASYLUMS QUESTION IN INDIA

WE have not infrequently remarked that no civilised country in the world gets off so lightly as regards its lunatic population as India does. When the accommodation for lunatics provided in India is compared with the provision made in the more advanced countries of Europe, this is at once seen. Take as an example the two Bengals and Assam. The population is not less than 86 millions and we find accommodation in five asylums for about 1,500 or 1,600 lunatics. Take the Punjab. The admirable Punjab Asylum at Lahore has accommodation for under 800 patients in a population of close on 20 millions. Let us compare these figures with some figures taken from Brindett's *Hospitals and Asylums of the World*. We quote from the 1891 edition, and we need hardly say that the provision now made for the mentally insane is far greater than it was 21 years ago, but the figures are enough to show how very cheaply the Government of India gets off.

In England (in 1890) there were 86,067 lunatics, of which 77,257 were paupers supported by the State, there were in all 4,547 licensed houses for their treatment.

In Scotland there were 12,300 registered lunatics, and 10,400 were supported at the expense of the State.

In Ireland there were 16,159 registered lunatics.

In New South Wales	2,821
In Queensland	925
In Victoria	3,288
In France	55,713
In Germany	42,669
In Switzerland	7,764
In Italy	18,411
In Belgium	2,000
In Finland	4,380
In Norway	1,953
In Spain	3,790
In United States, America	168,000

India had 345 million inhabitants at the date of the last census and provides for a few thousand lunatics only.

No wonder that in many provinces the question of asylum accommodation has become a very pressing one. There are many counties in

Great Britain that have more accommodation for lunatics than is provided for the whole Presidency, say, of Bengal.*

Current Topics

THE OLD YELLOW SANTONIN TREATMENT OF SPRUE

EVERY medical practitioner in India has frequently to deal with most troublesome cases of chronic diarrhoea, and most men will agree that they are very difficult to cure. Dr Charles Begg has for years advocated the treatment of sprue by *old yellow santonin*. In our columns (*I M G*, July, p 271) last year we referred to a discussion in London on this matter when Sir R. Havelock Charles, G.C.V.O., admitted that he was convinced of the evidence in favour of this method, and we now desire to call the attention of our readers to Dr C. Begg's book† on the subject which we strongly commend to our readers as it gives a very complete account of his simple methods and of his great experience during 30 years' practice in China and as a consultant at Bath in England.

The book is eminently practical and clinical, and is addressed to "the man on the spot," to the physician in the tropics, not to the London consultant. After Dr Begg found the value of yellow santonin he "never had to invalid a patient home during 13 years he continued to practice in China." Following an introductory chapter Dr Begg has one on the geographical distribution, anywhere "East of Suez" is all he has to say, and he is of opinion that sprue includes "Ceylon sore mouth," and "Indian hill diarrhoea," an opinion long ago given by Sir Joseph Fayrer. "Then etiology is the same, they reduce the patients to a similar condition, they react in the same way to treatment therefore. I group them all together under one heading for the purposes of this book which only aims at being a clinical study" (*Sprue*, p 29).

The disease, he maintains, is due to intestinal micro-organisms, of a yet undetermined nature. In Chapter III Dr Begg gives an account of the morbid anatomy of the disease, amply illustrated.

The morbid process, he tells us, begins in the ileum and extends from there. One of the most marked signs of active sprue is the *contracted* condition of the liver. The mucous membrane of the bowels becomes disorganised, and starvation ensues, toxins are absorbed and anæmia increases.

The chapter on diagnosis is clear and useful, and the state of the tongue, bowels, appetite,

* See also Major Woolley's article in this issue on *Insanity in the Andamans* for other figures.—Ed.

† *Sprue*, its diagnosis and treatment by C. Begg, M.D. Bristol: J. Wright & Sons, Ltd., 1912. Price 6s/ net.

etc., well described. There is no fever, and fever is always due to some complication.

Pernicious anæmia and pancreatitis are complications and have to be differentially diagnosed, pancreatitis having a wonderful clinical likeness to sprue.

Chapter VI deals with treatment—Dr. Begg has no patience with the “food faddists.” There is no specific diet.

The drug he advocates, as is well known, is “old yellow Santonin” which he gives in “5-grain dose, the last thing at night and first thing in the morning.” The santonin must be well rubbed into one teaspoonful of olive or almond oil.

This mixture with oil is better than to give it in capsules, etc.

These powders are given for six days. The points of improvement are a steady increase in the size of the motions and a gain in the patient's weight. In recent or slight cases one week's treatment will suffice to initiate the cure; in chronic cases, the treatment must be followed up, beginning again with the santonin “as soon as the first sign of hesitancy in the progress appears.” He has never had a bad result from the use of the drug. The nausea and yellow vision hardly appear in a severe case till recovery approaches. He expects a gain in weight of 2 to 3 lb per week; during convalescence it is well to give the drug once or twice a week at bed time.

It must be again and again insisted upon that ordinary fresh white santonin is utterly useless, “the more golden yellow the drug is the better.” To get a really good specimen of old yellow santonin requires six months' exposure to the sun in sub-tropical regions.

The yellow santonin has become altered from exposure to the sun and has been called *chromo-santonin*. He appeals to practitioners in the East to undertake this treatment early before the condition has become serious.

The rest of the book is taken up by considerations of diet and details of cases, many of them from India. Out of 100 recent chronic cases seen in consultation in England there were in Dr. Begg's hands 63 cures, 6 deaths, 3 improved and 28 unreported or lost sight of.

We commend this book to our readers. No doubt this treatment has been often tried, but it is doubtful if in every case the old yellow sun exposed santonin has been used. No other is of any use.

Another difficulty which may explain failure is the fact that santonin has become expensive, and the *British and Colonial Druggist** recently mentioned that it was very frequently adulterated with boric acid. Such a drug would, of course, be useless.

DYSENTERY IN FIJI *

THIS is supplement No. 2 of the Journal of the London School of Tropical Medicine and a companion report to the very valuable one of *Filariasis in Fiji* by the same author which we have already most favourably reviewed.

This report on dysentery is extremely able and valuable, but neither in India nor in Fiji will the question of dysentery be solved in a year or half a year's deputation to study it. To solve the many problems of this protean disease the deputation of one or two of the most competent observers for a year or less is not sufficient. It was not in this way that the problem of Malta fever was solved.

While we say this, with special reference to the need for dysentery research in India, we have no desire to belittle Dr. Bahl's valuable report. On the contrary we consider it one of the ablest reports we have yet seen on dysentery.

We do not propose here to summarise the report in the same way as we have done Dr. Bahl's report on *Filariasis*—space forbids—and moreover we strongly recommend our readers to read and digest this monograph for themselves.

It appears that in the group of 250 Islands, called the Fiji Islands, dysentery is most prevalent among the immigrants, chiefly coolies from India and natives of the Solomon Islands. It is noted that the prevalent disease among Indian coolies is a milder type of dysentery than that which formerly prevailed among the Solomon Islanders.

We quote herewith Dr. Bahl's own summary of his researches.

BACTERIOLOGICAL

“1. Epidemic dysentery in Fiji is of bacillary origin. Bacilli morphologically and culturally identical with Shiga's and Flexner's bacilli have been isolated from the stools and from *post-mortems*. Other bacilli, morphologically similar but giving an atypical reaction with various sugars, were found to be connected with special clinical types of the disease, or peculiar to any special race.

2. After long subculture of the bacilli the sugar reactions they gave were found to be variable and inconstant, but the reactions as regards mannite and dextrose remained constant.

3. Agglutination tests with dysentery bacilli of various types and with sera of patients in all stages of the disease proved neither constant nor reliable.

CLINICAL

1. Amœbæ were never found in the stools from which the dysentery bacilli were isolated.

2. Cases of all degrees of severity were encountered. These could be classified clinically into three main types, namely, the mild or

* See *I. M. G.*, Sept. 1911, p. 352.

* By P. H. Bahl, M.B. (Report to London School of Tropical Medicine.) Witherby & Co., London, 1912. Price 6s.

catarrhal, the acute or ulcerative, and the toxic or fulminant

3 An attack of bacillary dysentery was often a terminal affection in such chronic wasting diseases as pulmonary tuberculosis

PATHOLOGICAL

Microscopic—The large intestines were effected throughout its whole extent in every case. The small intestine appeared normal in all but two cases. Necrosis and gangrene of the mucous membrane were the most constant features. In cases of long duration sloughing of the necrosed mucous membrane over considerable areas had taken place. The rectum in many instances was the part most severely affected. *Microscopic*—The changes in the bowel wall were of the most intense inflammatory nature. Destruction of the epithelial cells of the mucous membrane and of the nutrient blood-vessels in the submucosa was the most constant feature.

EPIDEMIOLOGICAL

An epidemic of dysentery is of annual occurrence in Suva, the season corresponding with the period of greatest heat and greatest aggregate rainfall. There is evidence that the house-fly is the principal agent in the spread of the disease. Bacilli of the Shiga and Flexner type on recovery from the intestinal tract of the flies showed variable but constant reactions with the sugar tests.

TREATMENT

Of the series of cases treated in different ways those injected intravenously with polyvalent anti-dysenteric serum gave the best results, as far as could be ascertained.

PROPHYLAXIS

The abolition of epidemic dysentery in a town of the size and importance of Suva depends upon an efficient sanitation mainly directed against the house-fly.

AMŒBIC DYSENTERY

Amœbæ were found in the stools in a limited number of instances. The incidence of these cases bore no relation to the season of the year.

The clinical history and course of all amœbic cases were quite distinct from those of epidemic variety. The pathological lesions were also dissimilar.

No different diagnosis could be made by the simple inspection of the stools.

Although *Amarba coli* is a common parasite in the stools of normal Fijians, amœbic dysentery appears to be a rare disease among them. The amœbæ found in the dysenteric discharges approximated the type of Schaudinn's *Entamoeba histolytica*.

It may be noted that though Dr Bahr in several places notices that bacillary and amœbic dysentery are separate and non-identical, he

does not give any clear clinical differentiation between them beyond the fact that amœbic dysentery is often chronic, liable to relapses and associated frequently with liver trouble. In this connection, too, we may note that Rogers' Ipecacuanha treatment in presuppurative hepatitis and in cases of amœbic dysentery has been found by Dr Bahr to be successful.

This report is certainly a valuable one, and men in India, who are acquainted with bacillary dysentery in jails and asylums, will welcome and recognise the accounts given by Dr Bahr.*

THE TREATMENT OF BOILS

The following useful note appeared in the *Medical Press and Circular* recently—

"The general treatment of boils by wet antiseptic dressing, poultices or ointments is considered by Dr Gallois as nothing less than injurious.

These applications ease the pain, it is true, but macerate the epidermis, thus suppressing its rôle as a protector, permanent moisture of the skin is the best means for cultivating boils. On the other hand, plasters, ointments, or dry dressing can prevent propagation of the boils, although they are not altogether free from criticism. Dry dressing frequently succeeds, but it may also produce painful retention of the pus, the same may be said of plasters, ointments are the best of the three, provided the layer is thick enough to prevent desiccation of the pus and phenomenon of retention.

To all these different methods M. Gallois much prefers glycerine dressing, glycerine which has a great affinity for water, tends, so to speak, the epidermis, rendering it less permeable to the microbe (staphylococci). In any case, no propagation of the boils will be observed under glycerine dressing, which is otherwise agreeable to the patient.

Glycerine gives a sensation of coolness to the inflamed surface, not adhering to the wound it does not provoke painful dragging, while from its dehydrating properties it rapidly diminishes the congestion of the parts. After an application of 24 hours the turgid boil is found to be softened and almost withered. However, glycerine in its pure state, when abundantly applied, presents the inconvenience of running through the dressing on to the clothes or sheets. For this reason Dr Gallois employs exclusively glycerinum amyl, into which he incorporates boric acid (1/10), orphenic acid (1/40).

In the presence of an isolated boil, he immediately applies the glycerolate of starch, it acts as an excellent poultice and promptly relieves the patient. He touches the boil as little as possible, presses it sometimes, but never uses the knife. At the end of a week the cure is effected without any fear of a return.

When the patient presents a crop of boils over an infected region, the whole skin is largely washed with soap and water to remove the germs spread over the surface. All the little pustules are opened with the point of a pair of scissors and touched with a drop of iodacetone—

Metallic iodine, ½ dr
Acetone, 1 di

A piece of cotton wool rolled around the end of a match is steeped in this mixture and applied to the centre of the pustule. But when the boil begins to

* Rogers' advocacy of emetin in amœbic cases is well known, and apparently he considers the failure of emetin to show that the disease is not "amœbic," but we still need a clinical differentiation of the two types, and this we have not yet got.—Ed

develop, iodacetone is no longer capable of arresting it.

For this special treatment Dr Gallois takes a piece of antiseptic lint and pours on it a thick layer of the glycerine preparation, which he applies over the region, covers it with a layer of cotton wool and fixes it with a bandage. The dressing is renewed twice a day. A complete cure is obtained at the end of a fortnight.

When the boils are nearly well and there is no more suppuration, the region is well washed with soap and water and powdered with talc in which is incorporated a tenth part of paraffin. Paraffin renders the powder much more adherent and the skin less permeable to the microbes."

WHAT MEDICAL RESEARCH HAS DONE FOR HUMANITY

WE quote the following summary of what Medical Research workers have done from an able paper by Dr W W Keen of Philadelphia—

"1 They have discovered and developed the antiseptic method and so have made possible all the wonderful results of modern surgery.

2 They have made possible practically all modern abdominal surgery, including operations on the stomach, intestines, appendix, liver, gallstones, pancreas, spleen, kidneys, etc.

3 They have made possible all the modern surgery of the brain.

4 They have recently made possible a new surgery of the chest, including the surgery of the heart, lungs, aorta, esophagus, etc.

5 They have almost entirely abolished lockjaw after operations and even after accidents.

6 They have reduced the death rate after compound fracture from 2 out of 3, i.e., 66 in 100, to less than 1 in 100.

7 They have reduced the death rate of ovariectomy from 2 out of 3 or 66 in 100 to 2 or 3 out of 100.

8 They have made the death rate after operations like hernia, amputation of the breast and of most tumours a negligible factor.

9 They have abolished yellow fever—a wonderful triumph.

10 They have enormously diminished the ravages of the deadly malaria, and its abolition is only a matter of time.

11 They have reduced the death rate of hydrophobia from 12 of 14% of persons bitten to $\frac{7}{100}$ or 1%.

12 They have devised a method of direct transfusion of blood which has already saved very many lives.

13 They have cut down the death rate in diphtheria all over the civilized world. In nineteen European and American cities it has fallen from 79.9 deaths per 100,000 of population in 1894, when the antitoxin treatment was begun, to 19 deaths per 100,000 in 1905—less than one quarter of its death rate before the introduction of the antitoxin.

14 They have reduced the mortality of cerebrospinal meningitis from 75 or even 90 odd per cent to 20% and less.

15 They have made operating for goitre almost perfectly safe.

16 They have assisted in cutting down the death rate of tuberculosis by from 30 to 60%, for Koch's discovery of the tubercle bacillus is the cornerstone of all our modern sanitary achievements.

17 In the British Army and Navy they have abolished Malta fever which in 1905, before their researches, attacked nearly 1,300 soldiers and sailors. In 1907 there were in the army only 11 cases, in 1908, 5 cases, in 1909, 1 case.

18 They have almost abolished childbed fever, the chief former peril of maternity, and have reduced its mortality from 5 or 10 up even to 57 in every hundred mothers to one in 1,250 mothers.

19 They have very recently discovered a remedy which bids fair to protect innocent wives and unborn children, besides many others in the community at large, from the horrible cause of syphilis.

20 They have discovered a vaccine against typhoid fever which among soldiers in camps has totally abolished typhoid fever, as President Taft has so recently and so convincingly stated. The improved sanitation which has helped to do this is itself largely the result of bacteriological experimentation.

21 They are gradually nearing the discovery of the cause, and then we hope of the cure, of those dreadful scourges of humanity, cancer, infantile paralysis and other children's diseases.

Who that loves his fellow creatures would dare to stay the hands of the men who may lift the curse of infantile paralysis, scarlet fever and measles from our children and of cancer from the whole race? If there be such cruel creatures, enemies of our children and of humanity, let them stand up and be counted.

22 As Sir Frederick Treves has stated, it has been by experiments on animals that our knowledge of the pathology, methods of transmission and the means of treatment of the fatal "sleeping sickness" of Africa has been obtained and is being increased.

23 They have enormously benefited animals by discovering the causes and in many cases the means of preventing tuberculosis, rinderpest, anthrax, glanders, hog cholera, chicken cholera, lumpy jaw and other diseases of animals, some of which also attack man. If the suffering dumb creatures could but speak, they too would pray that this good work should still continue unhindered.

THE ACCOMPLISHMENTS OF THE FOES OF RESEARCH

Not a single human life has been saved by their efforts.

Not a single beneficent discovery has been made by them.

Not a single disease has been abated or abolished.

All that they have done is to resist progress."

WE direct attention to the interesting article in this issue by Dr L Fink on what he calls "Mongolian Birth Marks." The subject is one which is attracting the attention of Census Superintendents all over India.

From information collected in Bengal we are of opinion that there is some danger of concluding that if a child shows these marks it is a proof of Mongolian blood or ancestry. The syllogism would run,—Mongolian children have blue marks, this child has blue marks, therefore it is Mongolian. This is, of course, wrong. Beal appears to have claimed that these marks are a peculiarity of Mongols, but he has not shown that they are not found in other races, and as a matter of fact they are not at all uncommon in Bengal and other parts of India where a trace of Mongolian blood must be extremely unlikely.

DR H F LECHMERE TAYLOR, M D, of Jalalpur Jattan, Punjab, has issued a very useful pamphlet called "*Notes on Compounding and Dispensing*" for use in Indian hospitals. It is very practical and we can confidently recommend it to the notice of our readers. Every hospital compounder would be the better for reading it. Its price is only eight annas.

THE new series of the *Review of Bacteriology*, etc., just issued (May 1912), which is an epitome of the recent literature of the parasitology and the pathology of infective diseases and of laboratory methods, well deserves the attention of all laboratory men, and in India, where circulating medical libraries are few and far between, such valuable, concise and accurate epitomes as are given in *The Review* will be welcomed. The Editors are Dr. A. G. R. Foulerton, F.R.C.S., and Dr. C. Slater. The annual subscription is 10-6 per annum and *The Review* is to appear 5 or 6 times a year. The publishing office is 36, Whitefriars Street, London, E.C.

NOTICE.—Lieut.-Colonel W. J. Buchanan, I.M.S., the Editor, has been granted three months' leave from 26th July 1912, and Major D. McCay, I.M.S., will edit the issues of the *Indian Medical Gazette* for September, October and November.

Reviews.

The Medical Annual, a year book of Treatment and Practitioner's Index—Thirteenth Year, 1912. Messrs. John Wright and Sons, Bristol and London.

THE popularity of the Medical Annual is increasing yearly. There is no doubt it is a volume the publication of which is looked forward to by a very large number of practitioners. The reason for this is not difficult to find, it supplies the latest and most up-to-date information on a great mass of subjects. The literature, published during the year, is carefully sifted, filtered of extraneous matter, crystallized, submitted to criticism, and so arranged that it is immediately available to the practitioner for reference.

This thirtieth edition is in our opinion one of the very best of the series. Its merit, as the editor points out, is entirely dependent on the progress of medical subjects, which, in its turn, is the result of the high sense of duty ever impelling the practitioner to do the best possible for his patient. There is a long list of distinguished contributors who have done their work in a manner worthy of all praise. In a volume where all parts are good it is somewhat difficult to select those which appear to merit special mention, however we may be permitted to bring under the notice of our readers the section on therapeutics and particularly the articles on Salvarsan, radiography and ionic medication. There is a very fine review of the work done on regional anaesthesia, well illustrated with a large number of figures. Most medical men will be very interested in the articles on blood examination and the microscopic appearance of bone marrow under different conditions. The

surgery of the eye and orbit receives special attention and the several conditions are beautifully illustrated by photographs. New work on intestinal surgery, joint injuries, and kidney diseases is amply referred to, while the very latest information will be found on the surgery of the spine, psychoanalysis, tuberculosis, stomach diseases, and a host of other morbid conditions.

A special feature of the present edition is an article on the Insurance Act and its relationship to the medical profession, which will be read with great interest by the profession in India, although it may only affect its members indirectly.

There is a long section on medical and surgical appliances which should be of service to the practitioner in maintaining his outfit up-to-date. A section on pharmacy and dietetics and one on the books of the year give the practitioner an easy means of keeping in touch with the progress recorded. It need hardly be said that this is a volume that should be in the hands of every medical man, whatever his particular branch may chance to be. The table of contents, general index, special indices and abundant cross-references will be found of the greatest value in looking up any information that may be required.

On the Physiology of the Semi-circular canals and their Relation to Sea-sickness—

By JOSEPH BLOOM, A.M., M.D., LL.D. Messrs. J. T. Dougherty, New York, and H. K. Lewis, London.

THE author of this large volume on the relationship of the semi-circular canals to sea-sickness, not satisfied with a mere expression of views, began a long series of observations on the effects of rotations, aural irrigations, stimulation of the retina with strong light, galvanism applied to the mastoid areas, etc., to determine whether by such means phenomena resembling sea-sickness could be experimentally produced. His results showed definitely that a close connection must exist between the conditions obtaining under the above and that usually associated with sea-sickness. He then proceeded to study sea-sickness experimentally in the light of the knowledge gained by his observations on the effects of rotations, galvanism, etc.

The work is divided into three parts. The first deals with the general, anatomical and physiological considerations. This includes a very complicated account of the minute anatomy of the labyrinth, eighth nerve, remaining cranial nerves, the sympathetic nervous system, etc., and is far too complex and difficult except for those well up in the literature of the subject.

The author shows, however, that a most intimate functional relationship obtains between the various parts of the nervous system. While it is not possible to trace the minute anatomical

connections, it appears that every final motor nerve, or, at least, every common path is in relation with receptive areas of all parts of the body through afferent areas of greater or less resistance. In Part II is considered the physiology of the semi-circular canals, the effect of passive rotation, of rotation on the digestive apparatus, of drugs on rotation sickness, of rotation on equilibrium, on the eyes the general effects of aural irrigations, its effects on the digestive apparatus, on the eyes the effect of galvanism on the semi-circular canals, the mechanism of nystagmus, etc.

A large number of conclusions are arrived at implicating almost every system in the body as contributing to the effects of rotation. The most important practical result obtained is that the dorsal decubitus combined with the exhibition of atropin and stiehm is very effective in combating the nausea and sickness of rotation.

Part III deals experimentally with sea-sickness giving minute and extended observations on sufferers. It includes an immense amount of work on the blood pressure, pulse and respiration rates, analyses of the vomit, etc. The general conclusions are that sea-sickness is quite analogous to rotation sickness, aural irrigation sickness, and the effects of galvanism applied over the mastoid areas. Atropin, given hypodermically, counteracts the psychic depression that accompanies sea-sickness, calling off afferent irritating impulses—the prominent secondary sources of distress.

The volume is a very interesting one from many points of view, and the facts collected by the author of great importance.

The Prevention of Dental Caries—By J. SIM WALLACE, D.Sc., M.D., F.D.S. 2nd Edition. Published by the Dental Record, Newman Street, London, 1912.

THE first edition of this little book has been very well received by the profession, and already, within six months of its publication, a new edition is called for. It is being more and more recognised daily what a very important factor the state of the mouth is in the maintenance of health.

So much, indeed, is this the case that in many of the large London Hospitals the very first step in the treatment of disease is to have the mouth and teeth seen to.

The thoughts and ideas set forth by the author deserve the very closest attention of the medical profession, as the importance of the prevention of dental caries with its attendant ill-effects on the system can hardly be over-estimated.

The author's views are now becoming very generally known and recognised by the medical profession to which the public must look for guidance, and a diffusion of the knowledge that has been gained from laborious studies during recent years on this subject.

Dr. Wallace discusses the prevention of caries in a masterly manner, dealing in turn with most of the predisposing and exciting causes of the condition. It is unnecessary for us to enter into details of his views, except to emphasise the danger of the present day dietetic habits of mankind.

This has been called the "age of pap," and the mechanical methods by which the food is reduced to such fine conditions before being eaten, thus eliminating the normal self-cleansing processes that accompany fibrous food materials which require thorough mastication, have much to answer for in the extreme prevalence of dental caries at the present day. We would strongly recommend every one, layman or doctor, to obtain a copy of this little book and to practise and preach the precepts to be found therein. A special obligation falls on the medical profession to assist in the dissemination of the knowledge necessary for the prevention of this scourge.

Practical Treatment, Vol. III—Edited by MUSSER & KELLY. P. 1065, Fig. 53.

IN this work both medical and surgical treatment are considered, the former in detail, the latter in general terms. The subjects included in this volume are, constitutional diseases, and those of the respiratory, digestive, urinary, muscular, and nervous systems, and of the mind. Out of the total of 82 writers who contribute to the book as a whole, 38 are concerned in this volume. The only British contributor is Mr. Moynihan, the others being American. In each subject the main matter, the treatment, is preceded by a short sketch of symptomatology and etiology, a procedure which makes what follows rational and intelligible. Surgical treatment is in most evidence in cases of diseases of the nervous system, not of course because it is more frequently required in these than in other cases, but because here medical treatment is of little variety, and what there is to say on it can be said in a few words. The length of the articles on the different diseases appears to be reasonably co-ordinate with their importance, or with difficulty in their treatment, and a study of a selection of them shows thoroughness of consideration, combined with an entire absence of unnecessary verbiage. When subjects treated of by different writers overlap it is obvious that each is acquainted with what the other has contributed, so that the book is not merely a collection of articles by different authors, but has been ably and adequately edited and co-ordinated. The sections on diabetes mellitus, hæmoptysis, visceroptosis, and neurasthenia we found particularly interesting, but it is not to be understood that this suggests that they are of greater merit than the others, for the standard of excellence is throughout high, and the whole volume is one of great value. There is a full index of 50 pages.

Pathology—By R. TANNER HEWLETT, M.D. Third Edition. London: J. and A. Churchill, 1912. Price 10s. 6d.

HEWLETT'S *Pathology* has now become one of the most popular of students' text-books. The first edition only appeared in 1906 and here we have a third edition in 1912. The text of the new edition has been completely revised, and many additions have been made in the text of the chapters dealing with neoplasms, immunity, ductless glands, epidemic poliomyelitis and Wassermann's reaction. The book is very well printed and got up. The illustrations are many and good.

Hewlett's *Pathology* in its third edition will more than ever become a favourite, and is a reliable one.

Diagnostic and Therapeutic Technique—By ALBERT S. MORROW, A.B., M.D., pp. 715 with 815 illustrations. W. B. Saunders Company.

In this volume the writer has endeavoured to bring together and arrange in a manner easily accessible for reference a large number of procedures employed in diagnosis and treatment. On the whole the author has been very successful in achieving it, and has produced a book of great value to the general practitioner, inasmuch as it brings within his reach descriptions of methods which are only to be found in monographs or recent literature. The subjects dealt with range from giving a hypodermic injection to catheterisation of the ureters, and while some of the diagnostic methods described belong more to the domain of the specialist, the majority are quite within the range of general practice.

The book necessarily is mainly a compilation of other people's methods, but we should have liked it to be a little less impersonal than it is. A book wherein one gets a glimpse of the author's personality and methods is so much more readable. There has naturally been some difficulty in deciding how far to go in describing therapeutic technique, but we have not noticed any omissions of moment. The author has been guided in his selection of methods by the probability of the general practitioner being called upon to perform them. He has, therefore, included descriptions of certain surgical operations, such as transfusion, tracheotomy, etc.

The first chapter on general anaesthetics, we think, would have been better left out. The subject is much too large to compress into one chapter satisfactorily, and that this is so is evidenced by the fact that dosimetric methods of administering chloroform by the Vernon Harcourt or Roth Diaper apparatus are not even mentioned.

Two very useful chapters are those dealing with local anaesthesia and Bier's Hyperæmic treatment, while one on the collection and

preservation of pathological material for examination contains all that is necessary for the most varied examinations.

Chapters ix and x deal with exploratory punctures and aspiration of the various cavities of the body, and include notes as to the dangers and conditions in which they are called for.

The remainder of the book deals with the diagnostic and therapeutic methods applied to various regions, and each is preceded by a brief account of the anatomy of the part concerned.

The chapters on the special senses are good, although we scarcely see why the eye alone has been excluded. Directions for testing and correcting simple errors of refraction are much more frequently required than those for Bronchoscopy or Gastroduodenoscopy, both of which find a place later on in the book.

With reference to Bronchoscopy we are surprised to find Bismuth's instrument is neither figured or mentioned, although on this side of the Atlantic it has almost entirely displaced all other instruments. The author describes instead Killian's and Jackson's Bronchoscopes and Mickulicz's œsophagoscope.

In the chapter on the examination of the ear a notable omission is that of Baring's tests for the labyrinth.

The methods applied to the various divisions of the alimentary tract are described in order and include all the recent advances in the investigation of these regions.

The remaining portion of the book deals with the genito-urinary system, and a careful perusal of it has failed to detect any omission in the description of modern practice in this area.

Perhaps the author might have mentioned the use of indigo carmine as an aid to finding the ureters in cystoscopic examination. He does describe its use in a test of renal efficiency—the absorption test for ulceration of the bladder. We do not remember having seen it described before. The further we have gone into this book, the more we appreciate its value, for, although there is nothing original in it, it has proved a ready work of reference and saved looking up recent medical literature, while the inclusion of a large number of formulæ adds to its value.

In this country where reference libraries are few and difficult of access, and the size of the surgeon's personal library has to be rigidly restricted, a work of this class has an enhanced value, and we have come to the conclusion that it will prove a valuable addition to the I. M. S. officers' library. The illustrations are line drawings from photographs, are numerous and clear, most of them original, and some of them superfluous.

The binding, printing and paper maintain the unusually high reputation which Messrs. W. B. Saunders already possess.

Index of Differential Diagnosis—By various writers Edited by H. FRILSON, M.D. (Oxon) Bristol John Wright and Sons, Ltd. 16 colour plates and 200 illustrations

THIS is an important book. It covers the whole range of medicine and surgery, and aims at being of practical use to medical men in deciding the precise cause of any particular symptom of which a patient may complain.

The book is intended to be used in connection with Hutchinson's *Index of Treatment*, brought out by the same publishers. There is a remarkable index of 167 pages at the end of the book which will greatly add to the value of the book, e.g., take insomnia as the symptom, the Index will point to some eight references to this symptom in various diseases.

The illustrations are particularly good. The book is certainly valuable and can be certainly recommended to our readers.

Studies in Pulmonary Tuberculosis—By F. G. GRUBBINS, Pathologist and Physician, Sydney. Baillière, Tindall & Cox. Price 5/- net.

THIS is a book of 100 pages presented as a thesis for the Sydney M.D. The writer was a pupil of Dr. Camm Wilkinson and an enthusiastic advocate of his teaching. The dissemination and diagnosis of tuberculosis is first dealt with, and the relation of the febrile process to both tubercle bacillus and mixed infection studied. He next confirms Arnet's view that the presence of a large proportion of polymorphonuclear leucocytes with complete division of the nucleus into several parts is a good prognostic sign, and *vice versa*, and he finds an improvement in this respect to follow injections of tuberculin, which are fully dealt with in the last section of the book. There is much interesting information in this little work, which will be of value to those who treat many cases of tubercular disease.

The Cause of Cancer. Being Part III of "Protozoa and Disease."—By J. JACKSON CLARKE. Baillière, Tindall & Cox. Price 7/6 net.

WE have previously reported favourably on the first two parts of the Author's "Protozoa and Disease," as containing much valuable information on the subject. The present volume, however, is of a different nature, frankly reviving a controversy of twenty years ago with regard to the writer's claims to have demonstrated before the Pathological Society of London the presence of protozoal parasites in various forms of malignant disease, and critically dealing with the adverse report of the very eminent committee, who were unable to support his claim. Mr. Clarke produces very little new evidence in the present volume, and he still relies entirely on the same section in support of his views. The volume contains many excellent illustrations, including one coloured plate, but as it is entirely a matter of opinion whether certain appearances

are correctly regarded as protozoal parasites or as degenerative changes in the cells, such evidence is necessarily inconclusive, and the present volume does not appear to advance the question in any way.

Sleep and Digestion—By GEO. THOMSON, M.D.

THIS is an interesting little pamphlet by a well-known dental surgeon. It emphasises the great value of food digestion and the importance of sound sleep. He shows the great importance of prolonged chewing of food and the danger of "bolting" the food. He also states the important and often forgotten fact that hunger is not the same thing as appetite.

A Mother's Guide—By F. TWEDDELL, M.D. New York J. T. Dougherty.

THIS valuable little guide for mothers and nurses is written by Dr. F. Tweddell, of the Babies' Dispensary, New York, who was formerly a Major in the Indian Staff Corps, 28th P.I., and a passed Staff College man.

The little book is simple and practical, and it can be recommended to mothers and prospective mothers.

A Study of Malaria and Beri Beri.—By S. M. VAIS, M.D., Ed. Allahabad Pioneer Press, 1912.

WE confess to not having found any reason for the existence of this book. It is quaintly called a "Memento to the Coronation Durbar in Delhi," but what His Imperial Majesty's visit to India has to do with Dr. Vais' publication of his compilation on malaria and beri-beri (strange conjunction) we have not been able to see.

As for the book itself it does credit to Dr. Vais' wide range of reading. He has searched the whole literature of malaria and has compiled a very full account of modern work on this all important subject.

The section of the book devoted to beri-beri is equally colourless. It is a useful summary of recent knowledge on beri-beri and there it ends.

Treatment of Tuberculosis and Lupus with Allyl Sulphide—By WILLIAM C. MINCHIN, M.D. (Univ. Dublin). Published by Baillière, Tindall & Cox. Crown 8vo, pp. 100. Four Plates. Price 3/6 net.

ALLYL Sulphide is the active principle of garlic. Dr. Minchin believes it to be a most useful remedy for a percentage of cases of tuberculosis of all kinds. The volatile drug, entering the circulation through the lungs and alimentary canal, is carried to all parts of the body, and will exercise its action on tubercle bacilli wherever they are, provided that there is circulation of lymph in the affected part. If cases do not improve after 3 to 4 weeks of the treatment, the writer considers that the circulation of lymph is imperfect, that they are the subjects of "shut away fluid." The treatment

will be of no benefit unless the fluid is permitted to drain away by surgical interference, and to be replaced by fresh, garlic-bearing lymph.

He recommends the inhalation of the juice at night, as the most satisfactory method for those who have to work during the day, because there will be no smell of garlic in the breath during the day, which is said only to occur when the drug is taken by the mouth. For local application to lupus and to sinuses a paste made from garlic juice is used. Some striking cases of improvement or cure are reported.

Catechism Series, Surgery Pts. iii and iv
Second Edition Edinburgh E & S Livingstone Price 1s each

THIS is a well-known series and takes the place of the student's notebooks of former days. There is no doubt these little books are admirably compiled, better probably than a student could do from his text-book. As long as they are used to supplement the text-book they are useful and we know of no aid series better than those little books published by Messrs E & S Livingstone of Edinburgh.

Wheeler's Handbook of Medicine—Edited by W R JACK, M D Fourth Edition Edinburgh E & S Livingstone Price 8s

THIS little *Handbook* has been well-known among junior students in Edinburgh for nearly 20 years. The present is the fourth edition, and now but little remains of the original edition by Dr Wheeler. The sections on intoxications, specific infections and in tropical diseases have been amplified and improved.

The book is a reliable one and may well take the place of other similar handbooks for junior students.

Medicine Label Book—By S A S SOLEIMAN KHAN, KHAN SAHIB Meerut "Commercial" Press

WE have received another label book, which can be recommended. It is prepared by Khan Sahib Soleiman Khan of Meerut.

It is well and clearly printed and on good paper, and is certainly a useful collection of labels for use in dispensaries.

Public Health, Chemistry and Bacteriology—For D P H Students By D McKAIL, M D Bristol John Wright & Sons, Ltd, 1912 Price 6s 6d net

THE author is the Lecturer on Public Health and Forensic Medicine at St Mungoe's College, Glasgow, and his work is based on notes prepared for his classes on Public Health, Chemistry and Bacteriology. It is not intended to supersede Laboratory teaching, but to assist in and supplement the actual teaching in the "Lab."

The book is very compressed and contains an enormous amount of information, usually to be found scattered through several volumes.

There is an excellent if difficult chapter on immunity and anaphylaxis. We can commend the book to men on study leave, who are working for that most useful diploma the D P H.

SPECIAL ARTICLES

I

RICE AS A FOOD

RICE is probably the most prominent of the vegetable food materials of mankind. It is therefore of considerable interest to examine the question whether a dietary consisting mainly of rice is a sufficient one. This question gains further importance because of the close connection which has been proved to exist between the consumption of certain classes of rice and the incidence of those polyneuritic diseases which are commonly termed *beri-beri*.

Leaving aside the carbohydrate and caloric values, which are acknowledged to be high, the modern opinion of the value of rice as food turns on its protein and phosphorus content. In general terms it may be stated that rice presents the following characteristics: it is comparatively poor in protein, it is very rich in carbohydrates, especially in starch, the white variety is low in ash and especially in phosphorus.

With regard to the nitrogen and phosphorus content it has been shown that the more intensively a given rice is milled, the poorer it becomes in nitrogen and phosphorus. For practical purposes three stages of milling can be distinguished, judging by the phosphorus content of the finished article. These are—

- 1 Rice, husked only, 0.7–0.8 per cent phosphoric anhydride
- 2 Undermilled rice, 0.45–0.6 per cent phosphoric anhydride
- 3 Overmilled rice, 0.15–0.35 per cent phosphoric anhydride

The value of rice as a food from its protein standpoint is intimately associated with several varying factors, of which the following are the most important—(1) the percentage of protein it contains, this may be taken in round numbers at 7 per cent, (2) the actual amount of its protein capable of absorption, (3) the actual amount of the protein that has been absorbed which is capable of utilisation in the building up and maintenance of the protoplasmic tissues of the body, i.e., its biologic value.

(1) The nitrogen content of the different classes of rice is usually stated to vary greatly. In India no very large variations were met with, and it is therefore possible to speak of rice in general as containing about 7 per cent of protein. The great drawback of rice as a food from this standpoint is the very large quantity that must be consumed in order to provide the proper amount of protein essential for the needs of the body. Thus, if the normal daily allowance of protein be taken at 105 grms, it would mean the consumption of

1,500 grms of rice, or over 50 ozs. While this defect can be largely rectified by the substitution of some more highly nitrogenous food-stuff for part of the rice, the fact remains that in the food of the poorer classes very little of the more expensive nitrogenous foods can ever enter. The result of this is that the rice-eating people of the East can rarely live on dietaries that provide more than 50 to 60 grms of protein daily, as it is a physical impossibility for the average individual to ingest more than from 25 to 30 ozs of rice per day. They are, therefore, from this standpoint living under conditions of nitrogen starvation.

(2) This is serious enough, but its danger is further enhanced when we come to consider the value of rice as a food in the light of recent work on the percentage absorption of its protein element.

In connection with this it must be clearly borne in mind that the results obtained by investigators in Europe and America are not applicable to the conditions that obtain in the East. In European countries rice is never eaten in such large quantities as is customary amongst the rice-eating people of the tropics. Experiments carried out under European conditions, when the amount of rice in the diet was only a few ozs per day, show that the protein element is fairly well-absorbed. Thus Rubner found 75 per cent of the nitrogen of rice to be absorbed. Thomas and Yukawa obtained 67.4 and 66.1 per cent respectively.

In the recently published investigations into Bengal Jail dietaries, (a) in which rice is present in amounts up to 750 grms or over 26 ozs, it was shown that the total nitrogen absorption from the full jail ration was very poor, only a little over 50 per cent. It was also found that by decreasing the quantity of rice to more rational limits the protein absorption became considerably raised. The figures obtained were —

Full Jail diet, including 26 ozs of rice, protein absorption,	53.66%
Full Jail diet, the amount of rice reduced to 19 ozs, protein absorption,	68.33%

From the data furnished by a very large number of experiments it was evident that the absorption of the protein of rice varied inversely with the quantity present in the dietary, after a certain optimum quantity had been exceeded. That is, rice given up to 10 to 12 ozs would show an absorption of 75 per cent of its protein element, whilst a gradual increase beyond this amount will be accompanied by a gradual fall in the co-efficient of nitrogen absorbability, until in the full jail ration of 26 ozs, only about 53 per cent is absorbed.

The most plausible explanation of this finding would appear to be the very voluminous character of diets containing such large quantities of rice. 26 ozs of rice when cooked, as served out in the Bengal Jails, measure 2,800 c.c., sufficient to fill the ordinary human stomach three times a day. Some authorities hold that by cooking rice with the very minimum of water this defect may be largely overcome. The evidence, however, is not

very convincing. Thus Aron (b), one of the supporters of this view, admits that 100 grms of rice become $2\frac{1}{2}$ times that weight on cooking, but he says nothing with regard to the *volume* of the cooked article. In the Bengal Jails an increase to $2\frac{1}{2}$ times the original weight of the rice is exactly the figure counted on, and it was with this increase of weight and the corresponding volume that the above protein absorption from diets containing varying quantities of rice were determined. It may be concluded therefore that the volume of a rice diet affects adversely the absorption of its protein element.

The most recent investigations on the value of rice as a food, carried out by Aron and Hoeson (b) in the Philippine Islands, are of considerable interest in connection with the conclusions arrived at from investigations into the Jail dietaries of Bengal. The present Jail ration in Bengal was condemned for several reasons, but principally on account of the inferiority of rice as a means of supplying the body with the all-important protein it requires. This inferiority was shown to be due to the low protein content of rice and to the poor absorption exhibited by that protein.

Aron and Hoeson (b) working with medical students and prisoners corroborate the above findings, and show that it is difficult, if not impossible, to give the amount of nitrogen needed by the body by means of a diet of pure rice, or even when a certain amount of bacon is added to the diet. From their results it appears that a daily metabolism of between 8 and 9 grms of nitrogen are necessary in order to establish the body in nitrogen equilibrium, even when the fuel value of the diet is high.

The modifications suggested for the Bengal Jail dietaries (a) had for their object the raising of the level of nitrogenous metabolism of prisoners from its present condition to between 8 and 9 grms of nitrogen per day. This was shown to be quite feasible by the substitution of 4 ozs of wheat or fish for 8 ozs of the excessive rice, thus improving the diet in every way and bringing it up to the standard on which nitrogenous equilibrium can be maintained.

Aron and Hoeson also confirm the very low absorbability of the protein of rice. Their results, even when working with less than 26 ozs of rice in the dietaries, show that at least 33 per cent passes out unchanged, and in one experiment only 53 per cent of the protein of rice was absorbed. The nitrogen contained in the outer layers of the grain is absorbed only to the extent of 25 per cent.

From the standpoint, therefore, of the absorption of the protein of rice by the alimentary canal it may be concluded that rice, as the principal source of supply of the nitrogenous requirements of the body, is of very inferior value. This being so it should be the aim of all well-balanced dietary standards to decrease the quantity of rice and replace it by an isodynamic quantity of some of the more valuable nitrogenous food-stuffs, such as wheat, fish or meat.

(3) The third criterion of the value of rice as a food, viz, its biologic value, or its power of presenting the tissues of the body with the particular cleavage products necessary for their growth and repair, is not a subject that has so far been extensively studied

Recent investigations have modified our views on the means by which the body is able to make use of protein for its nutrition. The old ideas that protein in any form, changed to diffusible peptone by the digestive juices and absorbed as such, was capable of being built up into the bioplasm, have given place to a more precise and more scientific conception.

Abundant proof is now forthcoming that it is not protein in any form that is made use of in the growth and repair of the nitrogenous tissues, but the cleavage products of tryptic digestion—the units or building-stones into which the protein of the food is broken up by the combined action of pepsin, trypsin and erepsin—that furnish the material for the processes of nutrition.

When the further discovery was made that the different proteins of the several food-stuffs differ widely from one another in the number and character of their cleavage products, it became evident at once that therein lay the explanation of the varying values of different food materials in the nutrition of man. For while one type of protein such as casein, provides all or, at least, a large number of the specific building-stones needed by the body, another, such as gelatin, or zein, the protein of maize, lacks some of the most important cleavage products, and thus is of much inferior value in nutrition.

The biologic value of some of the proteins and their cleavage products has been investigated, and it has been shown that the more nearly a protein approximates in composition to the proteins of the tissues, the higher its value as a food and the smaller the quantity necessary to maintain the body in an efficient condition. whilst, on the other hand, the greater the departure of the protein of a food from the composition of the tissue protein, the less its value and the greater the quantity that must be eliminated and rejected as being of no use to the body. Thus, for example, the most efficient food for a dog is dog's flesh, as it provides the proper cleavage products, and in the proper proportions, for the growth and repair of the nitrogenous tissues. whilst, one of the least useful of nitrogenous foods is gelatin, as, although it contains plenty of nitrogen, certain combinations or building-stones that the body demands are not present in the cleavage products derived from its tryptic digestion, and therefore a great proportion of its nitrogen, although absorbed into the blood, is quickly changed to urea in the liver and eliminated as such by the kidneys. If, however the particular combinations known to be absent in the gelatin molecule—cystin, tyrosin, tryptophane, etc., be added, the value is greatly enhanced, so that it may even take the place of true protein. Modern research has therefore pushed our knowledge of

nutrition beyond the gross activities of digestion and absorption right up to the stage of assimilation and the selection of particular groupings for incorporation into the living protoplasm.

Very little information is available on the biologic value of the protein of rice, what little there is, however, would not appear to give it a high place, even amongst the vegetable proteins, as a means of satisfying the nitrogenous requirements of the tissues. The only data available are those supplied by a partial study of the protein of rice by Kajimura of the Japanese Navy (c).

This investigator showed that only a very small percentage consists of albumins and globulins; the almost entire absence of gliadins distinguishes the protein of rice sharply from all other cereals used as food. The main protein of rice, oryzenin, belongs to the gliadin class, but differs very much in its cleavage products from wheat glutenin—the only other gliadin so far studied.

Further work will be necessary to determine the biologic value of the protein of rice, but enough is known at present to make it exceedingly probable that it is inferior to the proteins of wheat and most other cereals, and grossly inferior to animal proteins in the nutrition of the tissues.

It may be concluded, therefore, that there appears to be complete unanimity amongst investigators with regard to the value of rice as a food. Owing to its low percentage of protein, the poor absorbability of that protein, and the meagre number of the all-important cleavage products its protein is capable of offering to the tissues, rice is unsuitable as the principal source of nitrogen in the dietaries of a people. Combined with some of the more highly nitrogenous and concentrated food-stuffs, such as wheat, animal food, and pulses, it fulfils the important function of providing the body with a cheap and abundant supply of heat for the upkeep of body temperature and energy for muscular work.

These scientific findings of the value of rice are corroborated by practical experience, as a survey of the races of mankind who can afford little but rice in their daily fare points undoubtedly to a low type of physique, poor muscular development, want of body-fat, and general inefficiency combined with a low resisting power to disease.

The second great standpoint of rice as the staple-food of mankind is with regard to its phosphorus content. It has been very generally held that the depletion of the organic compounds of phosphorus, largely contained in the outer layers of the pericarp and which are removed by over-milling, is at least one, and perhaps the most important, factor in the causation of beri-beri and polyneuritic diseases of that nature. A great deal of work has been done by different workers on the etiology of beri-beri, and it has been shown by Frazer and Stanton that subsistence for anything over 87 days on polished rice is followed by the disease. We need not refer to the investigations undertaken by these and other workers as their results are well-known.

From the accumulated evidence—the collection of which may be said to have begun in Japan in 1884, when the Navy ration was changed from rice to wheat and animal food, with the result that during the six years 1878-83, 32.5 per cent of marines and sailors suffered from beri-beri, whilst for six years, 1884-89, only 1.6 per cent were admitted for this disease in the last three, of which only ten cases occurred—rice has been acknowledged to be in some way intimately associated with the incidence of beri-beri.

In view of the relationship that appeared to exist between over-milled rice, low phosphorus content and beri-beri, a fair amount of work has been carried out on the phosphorus metabolism of people on a diet consisting largely of rice.

Thus Aton and Hocson show that an intake of less than 1.65 grms of phosphorus per 50 kilos of body weight, or 0.033 grms phosphoric anhydride per kilo, is insufficient to cover the demands of the body for phosphorus. Other authorities give higher figures than these.

Experiments carried out on prisoners show conclusively that a diet consisting of white rice, bread, bacon, and other food-stuffs poor in phosphorus does not cover the demand of the body for that element even with the addition of small quantities of fish. On the other hand, the balance becomes positive if unpolished rice, rice bran or phytin is added to the food.

Chamberlain and Vedder demonstrated that the neuritis of fowls, which is similar in every respect to beri-beri in man, could be prevented by means of an extract of rice polishing containing the following—

Total solids	1.34 per cent
Ash	0.03 " "
Phosphorous pentoxide	0.00165 " "
Nitrogen	0.0406 " "
Sucrose	0.88 " "

They further showed that the neuritis preventing substance is soluble in cold water, cold alcohol and is dialyzable.

In a more recent paper the same authors record some further progress in the identification of the neuritis—preventing substance contained in the extract of rice polishings. By elimination of certain of the bodies found in the above extract, they have been able to show that the neuritis preventing substance must be sought for in 0.4 per cent of solid matter that remains after the unimportant elements have been subtracted from the total solids. They conclude that it is dialyzable, soluble in water, in 95 per cent alcohol, in 0.3 per cent hydrochloric acid, is easily decomposed by heat, and that it possesses a strong affinity for bone black. As bodies corresponding to this description are found among the decomposition products of proteins, they propose to identify it by direct chemical analysis.

On the top of this limitation of the curative substance comes a paper by Casimir Fak from the Bio-chemical Laboratory of the Lister Insti-

tute of Preventive Medicine giving still further details of the body and provisionally stating its exact chemical nature. It is unnecessary to enter into a consideration of his numerous experiments nor his method for the preparation and final separation of the active substance. Suffice it to say that by precipitation with different chemical substances, filtration and testing of the effects of filtrate and precipitate on animals suffering from polyneuritis, he arrives at the following conclusions—

- 1 Polyneuritis is due to the lack of an essential substance in the diet. The substance is only present in minute amount, probably not more than 0.1 gm per kilo of rice.
- 2 The substance which is absent in polished rice and is contained in rice polishings is an organic base. It is completely precipitated by phosphotungstic acid and by silver nitrate and baryta. It is partially precipitated by mercuric chloride in alcoholic solution in the presence of choline and is not precipitated by platinum chloride in alcoholic solution.
- 3 The chemical composition may be taken to be approximately $C_{17}H_{11}O_4N$ (HNO).
- 4 The curative dose of the active substance is small—a quantity of substance which contains 4 mgr of nitrogen cures pigeons in from 6 to 12 hours.

It will be noticed with considerable interest that the above body contains no phosphorus at all, so that it would appear the absence of this element has nothing to do with the causation of polyneuritis in fowls or beri-beri in man. While this is most probably the case, the phosphorus content of rice is of very great importance as it has been shown that the susceptibility or liability to these diseases varies inversely with the percentage of phosphoric anhydride present in different samples of rice. Exact chemical analyses show that the phosphorus content of rice is largely dependent on the degree of milling that has taken place, thus—

Rice simply husked contains	0.65 to 0.80 per cent
Medium milled rice	0.4 to 0.65 " "
Over milled rice	0.15 to 0.4 " "

It is evident, therefore, that the phosphorus content varies directly with the amount of pericarp remaining, and this is true also for the chemical substance isolated from the bran and husks which possesses the power of preventing the polyneuritis of fowls or of curing the disease.

References. Papers consulted—

- (a) Scientific Memoirs, No 37, Investigations into Bengal Jail Dietaries. M'Cay, 1911.
- (b) Aton & Hocson. The Philippine Journal of Science, Rice as Food. 1911.
- (c) Kajima. The Proteins of Rice, the Bio-Chemical Journal. 1912.

THE MADRAS EYE CLINIC

Dr Temple Smith, F.R.C.S., Ed., in *The Ophthalmoscope* (1st April) had a very interesting article entitled *Notes from an Indian Eye Clinic*, or some impressions from the Government Ophthalmic Hospital, Madras.* Dr Temple Smith spent three months there and worked under Lt Col Elliot, F.R.C.S., for that period. He described the new hospital, to the completion of which Lt Col Elliot has devoted seven years. Dr Smith was particularly struck with the lateness of the stage at which many patients seek relief. He gives a big interesting account of the operative technique of the Madras hospital which is worth while quoting in full.

OPERATIVE TECHNIQUE

All dressings—wool and lint, cut into small pads—are sterilised daily by moist heat. The round tin in which this has been done is held by a *peon*, the lid opened, the required dressings are removed with forceps, and the lid is again closed. The mounted wool mops above referred to are kept in the same tin and used whenever swabs are required, this ensures a minimum of handling. The dressing used after all operations is a piece of dry sterile lint and a pad of wool, with a calico bandage of special, although simple, design pinned round the head. Sometimes, the lint is gone next day, and the wool rucked up,—obviously by the finger, no precautions would prevent this with some of these people. In spite of these dangers, however accidents seem to occur but rarely.

A zinc rack, with compartments for six two ounce bottles, containing respectively cocaine, atropine, eserine, adrenalin, dionin, and 12½ per cent argyrol is always to hand, it has a hinged cover and a handle like that of a bucket. A *peon* holds it, raises the lid without touching the bottles and the surgeon takes the one he wants. They are ordinary chloroform drop bottles with glass stoppers, and the whole concern is sterilised by boiling, with the exception of the adrenalin which is poured direct from the original receptacle into the sterile bottle.

A description of the procedure followed in cataract extraction may be given as typical of the methods employed in intra ocular operations generally. Some points in connection with other special operations will then be adverted to.

The day before operation, the prospective patients are rapidly but thoroughly examined in the inspection room. Each is accompanied by his *paperi*, on which are recorded notes of his present condition. The excellent system of record keeping which prevails in this Hospital may be referred to here. Cases of cataract, glaucoma, lacrymal sac trouble and some few other conditions, about which exact statistics are desired, have schedules whose only analogy is with an income tax return paper. This ensures that no point is missed by the sub assistant, and furnishes a wealth of valuable notes for statistical purposes. In cataract, particulars are noted of the state of the conjunctiva, lacrymal passages, corneal diameter of cornea, tension, visual power, and projection.

On the day of final examination by the surgeon, the activity of the pupil, tension (as tested by the fingers), the state of the lids on eversion, and of the lacrymal passages (as evinced by pressure over the sac), are rapidly investigated, and, after a glance at the notes, the patient is either passed for the morrow, or postponed for further treatment, or what not. On the afternoon of this—the day before operation each patient is seated in a chair, the eyelashes are cut short and the conjunctival sac is thoroughly washed out with sterile water. Atropine is instilled, and a trial dressing applied with a bandage and left on all night. Next morning—operations begin at 7.15 a.m.—if there is much secretion after the trial bandage the case is rejected for further treatment of the lids with silver nitrate.

If accepted, the patient, just before entering the operation room, after an installation of cocaine, has the conjunctival sac irrigated with mercuric perchloride, 1 in 3000 for several minutes, the eyelids being everted. This makes the eye very red and causes a free secretion of mucus. Colonel Herbert who introduced the method, believed that microbes lurking beneath the surface were extruded along with the mucus. If a conjunctival flap is made the congestion is apt to lead to troublesome hemorrhage and Herbert got over this by using adrenalin. Colonel Elliot does not care for adrenalin but then he avoids conjunctival flaps.

In any case, one has to operate on a red and angry looking eye, but although in most instances it remains injected

longer than where perchloride is not used, yet this appears to offer no bar to a complete convalescence. Some conjunctivæ react much more strongly to it than others. Herbert and Elliot use perchloride irrigation in their white patients with healthy conjunctivæ as a matter of course and would not dream of omitting it. These surgeons have shown that they have practically abolished suppuration in the cataract operation by this measure. In Madras for instance the percentage of suppuration which was formerly 320, in spite of the usual antiseptic precautions has been reduced to nil, and Colonel Elliot has shown that it can only be ascribed to this measure. In Indian practice at any rate, where the condition of the lids is very often bad and always suspicious and where cases are handled in a more or less wholesale manner there can be no doubt that perchloride flushing is not only justified by results but is absolutely indicated.

Cocaine is instilled four times at short intervals, the final one being made while the patient is on the table. Except for the perchloride washing no antiseptic is used from first to last. A light aluminium muzzle covered with linen and moistened with perchloride, is worn by the operator and assistant, caps are not worn. The hands are dried after washing, and care is taken to keep them so while operating, lest accidental infection should run down the fingers on to the instruments.

The Listerian principle as carried out in Madras is no mere catch word, but is expected actively to influence the operator and his assistants in every detail of their work. Well before the subordinate who makes a slip in this respect, while the visiting operator will discover to his surprise that there are several avenues of infection during an operation that had entirely escaped his notice. His attention will be politely but pointedly drawn to these, and if he is wise, he will make a mental note of them, and thereby improve his operative technique—for all these little matters are the outcome of a very large experience.

The patient walks into the room, and is placed on a glass table with his feet towards the window, from which a good light is obtained, a sterilised towel is put over the head. The conjunctival sac is then mopped out, with a sweeping movement, by means of the sterilised mops above referred to, the fornices especially being attended to. Normal saline is at the same time poured on to the eye from an aluminium vessel with a narrow spout.

A good deal of mucus is removed in this way. The edges of the lids are then compressed between the finger and thumb or two thumb nails, to squeeze out plugs of sebaceous matter, which is wiped away with another swab, and the eye again swabbed out with saline. The speculum is now inserted, great care being taken while doing so not to foul it on the margin of the lids. If this is accidentally done, a fresh instrument is at once obtained. Four sets of tools for cataract extraction are kept going at once, so that no delay may occur between operations, and that duplicates may be quickly available, for no instrument that goes into the eye is allowed to be used twice for that purpose without sterilisation. Before the day's work, the instruments are boiled for fifteen minutes, the knives for one only. Between operations, with a similar reservation, they are boiled for five minutes.

One of the most interesting and useful innovations in connection with extraction is the Madras method of opening the capsule before making the incision. A Bowman's cataract needle, with a slender shank and sharp blade, is entered in the limbus at the point where the knife will be entered for the incision. Using the blade after the manner of a knife, an attempt—usually successful—is made to cut out a central piece of the capsule with one sweep, failing this, a sufficient opening is made in any position desired. If this is done with care, no aqueous is lost. If it is, the incision can still usually be proceeded with without difficulty, or else, by placing the irrigator nozzle against the hole in the cornea, or waiting a few minutes, the chamber is readily filled, but this incident rarely happens. Besides the advantage of being able to incise the capsule more clearly and deliberately, there is this additional gain, namely, that one can determine whether the lens is hard soft, of Morgagnian, and modify one's incision accordingly. The opening in the capsule can be made much more accurately with a full eye than with an empty one—and more safely.

The incision is made with a broad Graef's knife in the horizontal meridian, unless the preliminary needling has revealed the indication for a smaller one. It is placed in the limbus avoidance of a conjunctival flap being raised. Colonel Elliot considers that the danger of infection from turning of the flap into the wound during the operation is a real one, as also

* In the *Lancet* (April 13 1912) Dr B. I. Lang also gives an account of his work in Lt Col Elliot's clinic in Madras, but confines himself to a clear and useful description of Elliot's operation or corneo scleral trephining.

is that of imperfect healing from its incarceration at the close, especially when the flap is small. There is no doubt that blood does at times collect in the anterior chamber in a very annoying way in spite of the use of adrenalin, that the flap is occasionally, if small cut off during the iridectomy, and that it obscures and renders more difficult that part of the operation. Some operators, however, contend that its virtues more than compensate for these disadvantages. *Tot homines, tot sententiæ*. One can only say that if the incision is cleanly made in the limbus the wound heals without trouble.

An iridectomy is the invariable rule, and follows immediately on the incision. If the pillars are caught in the angles they are released at once by a stream from the irrigator before the cataract is dealt with. The lens is delivered by spoon pressure, a light touch above the scleral margin of the incision, and a firmer one directly backwards on the corner at the level of the lower pupillary margin. The anterior chamber is then freely and boldly irrigated with saline solution of 0.7 per cent strength.

Colonel Elliot advocated the routine use of this measure in cataract extraction as long ago as April, 1903,³ and has been using it ever since. The writer adopted it two years ago,⁴ and it was therefore with no feeling of surprise that he saw its important rôle in the operation. In Madras no attempt is made to keep the temperature at body heat, but it must be remembered that the mean temperature is much higher than in England, while for many months it is over 100° F. A degree of force that would be surprising to the uninitiated can be used. Any tags of capsule in the neighbourhood of the wound are seized with Terson forceps, and removed by pulling towards the centre of the chamber. A piece of cortex that had been lodged behind the scleral lip of the incision is by this manoeuvre often brought into view and can then be readily washed out. If this piece is obstinate no hesitation is felt about turning the stream directly under the scleral lip the aim being to leave no cortex at all behind. (If this aim has been achieved the patient leaves the hospital at the end of a fortnight with a quiet eye and satisfactory vision.) The pillars of the iris are now replaced by a gentle stream from the irrigator and the eye is closed, no installation of any kind being made. The dressing applied is a piece of dry sterile lint next the eye and a pad of cotton wool, no adhesive strapping and no shield. Both eyes are bandaged for four days.

The eye is not disturbed for two full days unless pain be complained of. Atropine is instilled and a clean pad put on at the end of forty-eight hours. Cases are then inspected in the examination room every second day. On the ninth day, if all goes well the bandage is replaced by a shade and on the fourteenth if the vision is 6/18 or better the patient is discharged. If the eye is not perfectly quiet, or the vision is not up to the above standard the patient is detained in Hospital until it has improved or the reason for its inability to do so has been ascertained and remedied or noted as unalterable.

Needling is not often done as the patients are satisfied with only moderate acuteness of vision and do not return. Colonel Elliot holds very strong views on the impropriety of early needling—that is, earlier than six weeks. When the opportunity does occur two needles are used and the patient is prepared as for a major operation.

It may not be out of place to mention here that between each operation, while washing the hands, notes are dictated and entered under their proper headings on the patients' schedule regarding all details of the operation, notes are also dictated at each inspection. If a patient turns up at any time subsequently, his schedule is readily available and his condition is noted thereon by the registrar.

The foregoing method of preparing and handling the patient is resorted to before all operations.

• Glaucoma, both acute and chronic is treated by trephining. Before any treatment is begun, the tension is taken with the Schiötz tonometer and eserine instilled. Another tonometer reading is taken before operation, and again at intervals after. In trephining, a large conjunctival flap is dissected up not only to the limbus, but for one or two millimetres beyond it, stripping up the conjunctival layer of the cornea at its natural plane of cleavage. An essential feature of Elliot's operation is that the trephined disc shall consist, in from $\frac{1}{2}$ to $\frac{3}{4}$ of its area, of clear corneal tissue, he gives the ciliary body as wide a berth as possible. The iris is dealt with only if it presents in the hole, or a peripheral iridectomy may be done in any case. This is quite easily effected through the two millimetre opening, but is done only to prevent subsequent prolapse. Eserine is used prior to operation, but atropine is instilled on the next and subsequent days to prevent poster-

ior synechiae which seem prone to form if this is not done. The form of acute glaucoma set up by intumescent cataract is the only form for which trephining is not considered the most suitable procedure, the soft lens matter is apt to bulge into the trephine hole. In these cases a broad preliminary iridectomy is done temporarily to lower tension, and the lens is extracted later.

The writer performed Vahlhoff's modification of Elliot's operation twice, Colonel Elliot also tried it. We used the author's sclerectome, which was apparently in good order. When screwing it home the whole eye twisted with its movement in all the cases, and when, finally, it wrenched away, the opening was very small and had a rat-bitten look. It was used only on blind eyes. It was decided not to use it again. The instrument was placed in the museum. If a keratome incision is used, the writer would prefer to remove a piece of the anterior lip with the scissors, as being more effective and causing less trauma.

Congenital cataract is very common in India, and up to the age of 25 years is treated by breaking it up with a needle, and at the same sitting making a keratome incision in the limbus, and washing out the whole of the lens debris with the irrigator. Colonel Elliot's preference is for an iridectomy as well, although this may, of course, be omitted.

For iridectomies, a forceps is always used (never a hook) and ordinary scissors. The stop speculum is seldom if ever screwed down. Painful, blind, glaucomatous eyes, if not relieved by trephining, are treated by optic ciliary neurectomy. The internal rectus muscle is temporarily divided, and Elliot's special hook is employed.

Dacryocystitis as shown by retention, is invariably treated by excision of the sac. Conservative treatment is not suited to the conditions of Indian hospital practice. Chloroform is given, the sac exposed by a curved incision close to the canthus, the *tenuis oculi* is not divided, and the sac is cleared by blunt dissection and snips with curved scissors. A probe is then passed down the nasal duct and a spindle shaped cautery destroys the mucous membrane. The incision, which is closed with three stitches, heals by first intention.

For panophthalmitis chloride of ethyl is given on a mask and the globe is exsiccated. The cornea is abscised with knife and scissors, and the contents of the eye are removed by a special spoon suggested for this operation by Colonel Elliot and made by Arnold and Sons of Giltspur Street, London.

Entropion is treated by a modified Stratfield operation—An incision is made through the skin of the lid at the lower border of the tarsus, just clear of the hair bulbs. A curved incision is made upwards from the extremities of this, and this piece of skin and the tissues down to the tarsus are removed with curved scissors. The tarsus being thus cleared, a wedge-shaped piece is removed from its whole length with a sharp knife and three stitches inserted in such a way as to bring the lips of the gap in apposition. This procedure while quite as effective as, is quicker to perform than, most others.

Hypopyon ulcers of which a large number are seen, receive the cautery, atropine and Guthrie's section. They are nearly always in an advanced stage on arrival. An apparatus for iontophoresis is on the way out, and it is intended to give this method a thorough trial.

Vaccine therapy although not used to any great extent, is employed in selected cases. With the advent of a fuller pathological equipment a wider use will be made of it, if justified by reports from clinics where it has been in use on a large scale. Salvarsan is used in syphilis in some cases, not in all, as its cost (fourteen shillings per tube) is prohibitive. It is employed intramuscularly, so far without sloughing or other mishap.

Correspondence

POPULAR PREJUDICES ABOUT MALARIA AND QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—May I carve a little space in your much esteemed journal for the insertion of the following lines on some of the ideas entertained by country folk about malaria, the remedies they generally resort to and the spirit with which they receive quinine.

Malaria—Malaria is regarded to be inseparably associated with the soil and not an alien thing and consider it a necessary accompaniment of frail human body, hence they

do not at all cue to take any prophylactic for this scourge. Even when they are affected with malaria, they take their ordinary diet, breathe as usual and attend to their daily round of duties. When the disease is on its ascent they try quacks and country medicines which in most cases prove unsuccessful and they never come to regular treatment unless and until chronically suffered, and seek medical aid when most of the cases turn practically incurable.

Treatment—The most common form of treatment prevalent in the villages is technically called "Chitra"—i.e., crusting a septic wound. These wounds are generally done in forehead, near the junction of the eyebrows, over the spleen, and in the inner aspect of the left forearm. This sometimes proves successful as it raises the index power of the blood and attracts the leucocytes of the body.

2 The taking and wearing of some magically charmed root of some tree in the body in the form of amulet and talisman.

3 In the comparatively advanced classes, the use of patent medicines is very common, and in the majority of cases people are seen buying disappointment by their hard earned money. These people are quite in the dark as to the ingredients of these medicines of which quinine forms the principle factor.

Quinine—The very term quinine is a terror to them. Some people are of opinion that quinine aggravates fever, others say that quinine dulls the nervous system and thus produces encephalism. Opinion is undivided about the evil effects it produces on the system. Some say that quinine may be a remedy for the rich but not for the poor, then contention is that quinine does not act at all unless a man takes sufficient quantity of milk and is well or richly fed, for which these poor people can ill afford to pay. In other they hold that if a patient be given quinine, he must shun the sun, must not touch water, should be confined in a house and must refrain from taking any food. They say that fever sets in in more aggravated form in case these directions be not strictly adhered to. In some cases people returned me the unused quinine tube which I offered them for use in one of my visits, but on enquiry on a subsequent visit I came to learn that the neighbours won them over to their side, constantly pouring into their ears hostile feelings against quinine. Instances in which people begged me to give them some good medicine other than quinine are not few and far between. Quinine they say is so strong a medicine that if it fails to cure malarial fevers, no other medicine will act. These ideas have taken so deep a root in the minds of the innocent village people that they seem to be fortified against any argument, and as a matter of fact they are not amenable to reason. I have found in my experience that in spite of my repeated entreaties and advice they cannot pin their faith on quinine, and so cannot be induced to use quinine nor can the usefulness of quinine be brought home to their minds.

Prevention—"Prevention is better than cure." Judging from the poverty and ignorance of the masses, I think preventive measure is more suited to the needs of our country than curative measure which presupposes a good deal of expenditure and lots of trouble and suffering. The preventive measures generally adopted in other countries cannot be adopted here for reasons noted below—

1 This part of the country abounds in pools, paddy fields and stagnant waters—the breeding places of anopheline mosquitoes—and any attempt to connect them by canalisation or to cover them with earth, will, I think, be far from practicable.

2 The mosquito theory is unknown to the country folk, and that they would protect themselves from mosquito bites is more than what can be expected of them—moreover they are too poor to pay for mosquito curtains and mosquito proof netting which, according to their ideas, is not a bare necessity.

3 The prevention of malaria by the prophylactic use of quinine is in a sense impracticable from the spirit in which they receive quinine.

Suggestions—These apparently impracticable measures may be made practicable, only if a clear idea of malaria, its origin, its remedy and the efficacy of quinine, be thrown open to these people. To carry this out to practice, cultivation of rudimentary principles of sanitation in the public mind is of first and foremost importance, and for this culture one must turn his full attention to the *patsalas* which may be regarded as a nursery of manhood. The line in which sanitary education with chances of success can be imparted—so far as the matter has been revealed to me—is as follows—

1 The *patsala* pandits are trained in the Gurukul Training schools, the number of which are 4 or 5 in a district, where along with other subjects they may be trained with advantage in the principles of sanitation and infective diseases by qualified medical men. These pandits in their turn can impart similar instructions to the tender boys of their respective *patsalas*, who, I believe, will form a stratum when they would attain maturity over the basis laid in their plant

minds by their teachers. In this way each individual would be familiar with the modern ideas of sanitation, about malaria and the efficacy of quinine.

2 A far reaching effect and a solid progress can be made if a few chapters of the books prescribed for the Lower Primary and Upper Primary schools be devoted to sanitation and epidemic diseases fully elucidating the principles with common examples. My humble conviction is that some energetic and patriotic educationist will take up the cause and help the progress.

3 Circulation of leaflets from time to time dealing with the high rate of mortality from malaria and the necessity of zealously guarding their own interests by taking prophylactic or preventive measures, for the non compliance of which each individual in the vicinity is likely to fall a prey to this scourge.

4 The appointment of a Health Officer in each district whose duty will be to enforce the laws of sanitation by itineracy and to educate the public about malaria and other infective diseases as far as possible will, with equal force, advance the cause. This Health Officer can supervise the work of overseers in the construction of roads and excavation of canals taken up by the Local and District Boards. These overseers get earth from here and there dug on both sides of the road, forming breeding places of anopheline mosquitoes—the carriers of malaria. The earth dug out from silted up canals may, under instruction of this proposed Health Officer, be properly utilised, and under his strict supervision and direction any further progress of malaria can be arrested. This Health Officer can train the Gurus of the Gurukul Training school with advantage in addition to his own duties.

These suggestions if strictly followed, will exercise an educative value over the community and shall induce each individual to look after the health and improvement of his family. Individual cases would lead to general, and thus reduce the percentage of mortality and the general tone of public health will improve in course of time.

DACIA
The 23rd June 1912

BYOMKES DAS GUPTA,
Sub Assistant Surgeon,
Anti Malarial Campaign, Dacca,
Bengal

HYPODERMIC SYRINGE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—The choice and the sterilization of hypodermic syringe for the general medical practitioners who have to handle the instrument many times a day seem to be a bugbear. All glasses syringe is the first necessity to ensure asepsis and prevent leakage and loss of fluids. The "glaseptic" syringe of Messrs. Parke, Davis & Co. is, indeed, the best, and is preferable to the "all glass hypodermic" syringe of Burroughs Wellcome & Co., for the reason that the latter consists of three parts besides the needle, while the nozzle in the 'glaseptic' is one with the barrel. The metal case in which the glaseptic syringe is sent is filled with water into which the barrel, piston and needle are dropped, and the case is clipped by an uterine forceps which every practitioner carries with him in his bag and held over fire. Messrs. Parke Davis & Co. advise a few diameters of methylated spirit to be poured into the cover turned upside down and the case of syringe placed on the ligated spirit. But I wish to draw the attention of the medical practitioners to the great advantage gained by the method that I adopt. I have one of the petrol heaters sold for Rs 140 by Messrs. Ruttanjee Ratanlal & Co., Crawford Market, Bombay, which I carry about in my bag. I light it with a double match when it begins to give intense flame within a second or two. I hold the case of the syringe with water on the flame with the aid of the catch forceps and the sterilization is complete in a few seconds. I would recommend this strongly to all my busy friends.

G R

TRANSFUSION OF BLOOD IN 15TH CENTURY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I found this extract from the Life and Time of Savonarrola by Villari* as it seemed to me to be interesting from a medical point of view in two respects—

(1) Its mention of vivisection

(2) Transfusion of blood used therapeutically

"In fact, the vital powers of Innocent VIII were rapidly sinking, he had been for some time lying in a lethargic state, that was occasionally so death like as to make his attendants believe that all was over. Every means had been tried in vain, when a Jewish doctor proposed to attempt his

* Vol I, ch ix, p 151. Book published in 1890 by Unwin.

cure by means of a new instrument for the transfusion of blood. Hitherto this experiment had only been tried upon animals, but now the blood of the decrepit Pontiff was to be transfused into the veins of a youth who gave his own in exchange. Thrice in fact, was this difficult experiment made. It did no good to the Pope and three boys, costing the sum of one ducat apiece, lost their lives through the introduction of air into their veins. The Jewish doctor then fled, and on July 25th, 1492, Innocent VIII finally expired.

DERA ISMAH KHAN,
June 1912

Yours etc
A H NAPIER,
CAPTAIN, I M S

MELON EATING AND CHOLERAIC ATTACKS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I would very much like to know if any readers of the *Indian Medical Gazette* have had cases of severe diarrhoea, closely simulating true cholera following on the ingestion of a considerable amount of ordinary melon especially when the melon is eaten after fasting for some time. I have seen a number of what were apparently sporadic cases of cholera and the patients have given a history of a large meal of melon some 12 to 24 hours previously. Some of these cases were fatal.

I, myself, had a severe attack once on my knees, the result of eating half a melon after a long day, during which I had no food, nor did I get any food for some hours after eating the melon. The attack came on the next afternoon and was very like cholera, there were frequent rice water stools, cramps and great thirst, no vomiting. The attack passed off in about six hours and after 24 hours I was all right. As far as I could find out cholera had not been heard of in the district for a long time, and no cases occurred afterwards. I think it possible there may be some chemical substance in melons capable of bringing on such choleraic attacks, therefore I think it would be interesting to hear the experiences and opinions of other medical men on this subject. Of course the attacks may be brought on by the simple irritation of a large mass of indigestible vegetable matter in the intestine, but, if so, why the special choleraic symptoms?

Yours truly,
T F P

FORMALIN AS A POISON FOR FLIES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Some months ago there was a correspondence on the use of formalin as a fly poison in the *Indian Medical Gazette*. As it is extremely desirable to get rid of flies from latrines in jails, asylums and hospitals, the following note from *The Medical Officer* is given herewith. The plan is worth trying—

Prof R I Smith, entomologist at the N C Agricultural Experiment Station in the United States, strongly recommends the use of formalin as a poison for flies. The method he has found most successful is the use of formalin in milk in the following proportions—

One ounce (two tablespoonfuls) of formalin
16 ounces (one pint) of equal parts milk and water

In this proportion the mixture seems to attract the flies much better than when the formalin is used in sweetened water. The method that has usually been recommended. The formalin milk mixture should be exposed in shallow plates—a pint will make five or six plates—and by putting a piece of bread in the middle of the plate, it furnishes more space for the flies to alight and feed, and in this way serves to attract a greater number of them. Prof Smith first used this poison in a milk room where the flies were very numerous, and poisoned over 5 000 flies in less than 24 hours, on several different occasions. Over a pint of flies were swept up in this room each time the poison was used. Another very conclusive test was made in a large calf barn where flies were extremely numerous. Six ordinary size plates of the formalin poison mixture killed about 40 000 (four quarts of flies), between 12 o'clock noon and 8 o'clock the next morning. This is only an illustration of what can be done by the use of formalin about stables where the flies are breeding. Prof Smith points out that formalin is cheap as well as effective and he believes it to be far more valuable than any of the many fly poisons so widely advertised in the United States.

June, 1912

Yours etc,
D P H

THERAPEUTIC NOTICES

CIVIL Surgeons and others, who have the ordering of large quantities of drugs, will be interested to hear of the great strides lately made by the well known Calcutta firm, SMITH, STANISTREET AND COY. The demands made upon them for analysis and manufacture had grown so great, that extension became urgently necessary and they have more than doubled the accommodation for these branches of their trade. Special men have been sent out from England for the analytical work, and the enormous amount that has already accrued from the mercantile community of Calcutta had made further extension necessary. Curiously enough they have been forced into manufacturing Chaulmoogra oil, owing to the utter impossibility of procuring a pure supply, and the novelty of it just being able to obtain pure Chaulmoogra has created such a demand from England and elsewhere, that every drop that can be expressed is booked up for twelve months in advance. A visit to the laboratories where standardised tinctures, etc., are made would well repay any medical man happening to be in Calcutta. Every article is thoroughly tested before being issued to the public, and so perfect is the system employed, and so rigorous are the tests, that the medical profession may depend on receiving the exact article desired as it is directed in the B P.

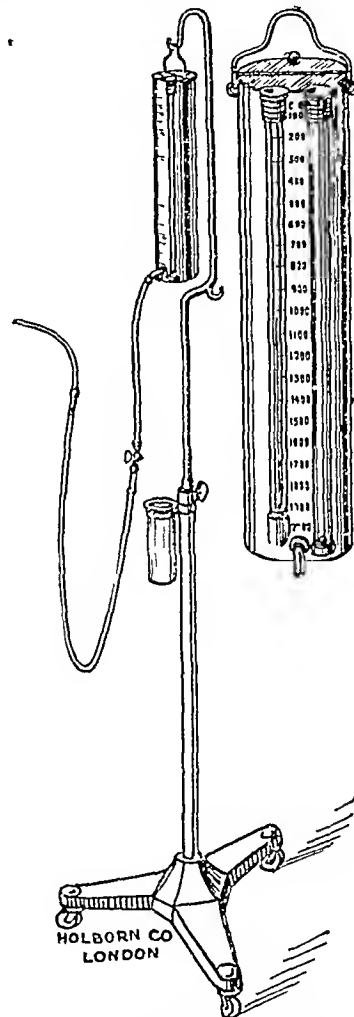


FIG 1—Enamelled Iron Adjustable Stand, with heavy base

An interesting method of calculating the date of arrival of stores from the time of indent has been worked out by Smith Stanistreet. It is as follows: take the mailing time from the station in question to Calcutta. If the indent is a long one, say three or four hundred items, add three days for making up and despatching the order, and then add the number of miles to be traversed by the goods train, divided by 99—that being the rate per diem at which goods trains travel—the sum of these items gives the total number of days. This of course applies to distances of over 100 miles.

PAGE'S apparatus for administering Hedonal.—The above block shows the apparatus suggested by Mr. Page.

+ "Judeus quidem aufugit, et Papa sanatus non est" on the concluding words of Infessura. But the Florentine Ambassador does not give this incident, although it is recorded by many historians.

FROES, of St Thomas' as manufactured by the *Holborn Surgical Instrument Makers* Price 3 guineas

The *Apparatus* consists of a stout nickel plated cylinder, 15 x 3½ in., of 2,000 c/c capacity with a water gauge, and thermometer let in at the side. The container is graduated to 2,000 c/c in divisions of 100 c/c and is provided with a regulating tap, hinged lid, and a folding wire handle which can be attached to a hook or any suitable stand. A length (about 5 ft) of pressure tubing is fitted to the nozzle of the tap, an all glass regulating drop tube inserted about 12 in. down, and a silver cannula at the end.

The amount of solution infused is clearly shown by the water gauge and graduations marked on the container. The flow can be regulated by means of the tap and the rate at which it is running can be seen in the drop tube.

The thermometer shows the temperature of the solution in the container.

Sterilizing—The apparatus should not be taken to pieces, but put bodily into the sterilizer, having first slightly loosened the screws over the thermometer and water gauge, to allow for expansion of the glass. The screws should be carefully tightened before the solution is poured into the container. The apparatus is not constructed for sterilizing by *dry heat*, but will stand boiling under pressure.

The *Solution* is made up as follows—Hedonal (Bayer) is dissolved in normal saline at 70° C to make a 75% solution, this is filtered and then boiled for five minutes. The solution is stored in sterile flasks.

The *Operation*—The vein is exposed as for an intravenous infusion, and the cannula tied in while the solution is running. The rate of flow should be about 100 c/c to the minute. The temperature of the fluid in the tank should be about 115° F at the commencement of the operation. When anæsthesia is established, the rate of flow is cut down, but it must not be allowed to stop completely or clotting in the vein may occur. On an average 500 c/c of fluid are required to anæsthetise an adult, and another 500 c/c for each hour afterwards.

STERILISED KAOLIN is now largely used, not only externally in the treatment of ulcers, boils, etc., but internally in various bowel disorders. Even in cholera a success is claimed for its use. In such cases an absolutely pure fine divided drug alone should be used, such is the sterilised KAOLIN prepared by E. Meick. Kaolin is, of course, a purified silicate of aluminium.

WE have received an account of the Congress of Exhibition of VIOL babies of all nations held at Olympia—

"The babies represented the 40 different races by whom Viol is used. They were in charge of a staff of trained Nurses under the superintendence of a medical man, and had been staying in London for three weeks as the guests of the Viol Company, who had specially furnished for them several large houses.

Here the babies of all nationalities gathered to indulge in every kind of game. Flowers and toys were sent daily, and the Viol Company may be congratulated upon having given these little ones the time of their lives. There were babies from China, Japan, India, Ceylon, W. Africa, S. America, the United States, West Indies, Egypt, Turkey, Greece, Austria, Germany, Russia, Poland, France, Spain, Portugal, Malta, Norway, Sweden, Denmark, Holland, Switzerland, Hungary, the various Balkan States, etc.—all of them Viol babies, and amongst them some who owed their lives to the building up power of Viol. Notwithstanding the different nationalities the strangeness soon wore off, and the little ones from the Far East were fraternising with those from the West, Dutch with Chinese, Indian with Portuguese, whilst South America made friendly advances with West Africa."

MESSRS DOWN BROTHERS, LD, 21, St Thomas' Street, London, S.E., have sent us a fascinating catalogue of *aseptic furniture* for operation rooms, etc. We strongly recommend this to Medical Officers who have funds for improving their hospitals.

MESSRS SIEMENS BROTHERS, Cuxton House, Westminster, London, send us catalogues and extracts from articles in the Archives of the Röntgen Rays on their various new instruments used in X-Ray work. In February 1912 the Archives had a valuable article by Dr. F. Nagelschmidt of Berlin on the *diathermic treatment of circulatory disorders* and in September 1911 Dr. H. Schmidt has one on the safety Röntgen Tube stand for fluoroscopy. We may direct special attention to the *Ekesco* intensifying screen, for which many advantages are claimed.

Service Notes

LEAVE OVER TWO YEARS

It is generally understood that officers under the Civil Leave Rules can combine privilege leave and furlough up to a total of two years (C S R, Article 304). It is not, however, generally known that this two years' limit is not applicable in the case of an officer who combines study with other classes of leave.

THE present extremely complicated para II of the Study Leave Rules has been simplified as follows—

The rate of pay admissible during Study Leave is as follows—

A To an officer taking Study Leave while under Military Leave Rules the rate of furlough pay admissible to him under these rules.

B To an officer taking Study Leave while under Civil Leave Rules the rate presented in C S R, Article 314 for an officer on ordinary furlough, subject to limits laid down in Article 314 (a).

THE following India Army Order No 364, dated Simla, the 17th June, 1912, is published—Dress—British Officer—With reference to Army Regulations, India Volume VII page 9, as amended by India Army Circular 10 of 1902 regarding the pattern of collar on the white drill mess jacket, the *stand up collar* has been adopted for the Indian Medical Service, with the exception of Surgeons General. The latter wear the roll collar under the provision of G O C O No 901 of 1902.

This will be embodied in the revision of Army Regulations, India, Volume VII, now in hand.

WITH a view to assimilating peace and war designations, the Government of India have decided that the present designations of officers of the medical services enumerated below should be altered as follows—

Present designation	Altered designation
Principal Medical Officers of Divisions, when the appointments are held by Surgeons General	Deputy Director of Medical Services
Other Principal Medical Officers of Divisions and Brigades	Assistant Director of Medical Services
Sanitary Officers of Divisions	Deputy Assistant Director of Medical Services (Sanitary)
Staff Officer for Medical Mobilisation Stores	Deputy Assistant* Director of Medical Services (Mobilisation)

* Sanctioned in Army Department letter No 101 17 (P M O 1), dated the 27th September 1911.

SURGEON MAJOR MOSCARDI BFLIARMIN BRAGANZA, Bombay Medical Service, retired, died on 20th December 1911. He was educated at the Grant Medical College, Bombay, where he took the L M S, and also the L S A and L F P S G in 1889, entered the I M S as Surgeon on 2nd April 1891, became Surgeon Major on 2nd April 1893, and retired on 15th September 1898. He served in Burma in 1886, receiving the medal and clasp.

LIEUTENANT COLONEL ATMARAY SADA SHIVA GRANDIN JAYAKAR, Bombay Medical Service, retired, died on 11th August 1911. He was educated at the Grant Medical College, Bombay where he took the L M S in 1867, and was appointed Travelling Fellow. He then received an appointment as Civil Sub Assistant Surgeon, which he held for a very short time, for, going to England, he took the M R C S and L R C P London in 1867, and entered the I M S as Assistant Surgeon on 30th September 1867. He became Surgeon on 1st July 1873, Surgeon Major on 30th September 1879, Surgeon Lieutenant Colonel and Lieutenant Colonel when these ranks were instituted, and retired on 23rd April 1900. The Army List assigns him no war service. He is the author of the small works, *The Present Prabhus of Bombay*, and *The Prabhu Woman, her Social and Physical Grievances*, and also translated from the Arabic a Zoological lexicon, *Ad Damu's Hayat at Hayawan*, published in 1907.

CAPTAIN DONALD STEEL of the Indian Medical Service, died on 12th December 1911. He was born on 21st July 1879, educated at Glasgow University, where he took the M.B. and C.H.B. in 1901 and entered the I.M.S. as Lieutenant on 1st September 1904, becoming Captain on 1st September 1907. He was placed on permanent half pay on account of ill health on 1st November 1908, after which he settled at Perth, West Australia. The Army List assigns him no war service.

In the *Indian Medical Gazette* for March 1912, under the head of *Literary Notes* pages 120-122 was contained an article on the promotion of Assistant Surgeons Andrew Jukes and Richard Sharp of the Bombay Medical Service, in 1806 and in 1821. In this article it was stated that 'Sir Gore Ouseley appears to have been mistaken in saying that Jukes was specially promoted to full Surgeon at the request of Muhammad Nabi Khan,' the Persian Ambassador. The following extracts from the *Bombay Gazette* for February and April 1806 show that Sir Gore Ouseley was not mistaken, and that Jukes was so promoted at the request of the Ambassador. As, however, Jukes stood first on the list of Assistant Surgeons at the date of his promotion, 14th February 1806, and as the next vacancy in the rank of Surgeon was absorbed, the only actual difference that Jukes' special promotion made, to himself, was that he got the rank and pay of Surgeon nearly two months earlier than he would otherwise have done. To others, it made no difference at all.

14th February 1806.—Dr Jukes, now the Senior Assistant-Surgeon, being in attendance on the Persian Ambassador, is, at His Excellency's special recommendation, advanced to the rank of full Surgeon from this date.

April 1806.—In consequence of the death of Surgeon William Boag, of the battalion of artillery, which happened on the 1st instant, the Hon'ble the Governor in Council is pleased to direct that Mr Andrew Jukes, who was by the minutes of council, under date the 11th of February last, appointed a surgeon at the special request of His Excellency the Persian Ambassador, be brought on the strength of the establishment *vide* Boag, deceased, retaining the date of rank given him on that occasion, the 14th February 1806.

LIEUTENANT COLONEL R. H. ELLIOT, F.R.C.S., of Madras is bringing out a book on trephining for glaucoma, Major Elliot's operation which has been very favorably received by the profession in Europe.

THE following promotion is made, subject to His Majesty's approval—

Lieutenant to be Captain, I.M.S., dated 31st January 1912
Berkeley Gale, M.B.

THE undermentioned 4th Class Assistant Surgeons, having completed five years' service in that class, to be 3rd Class Assistant Surgeons, with effect from the date noted against their names—

Edward Henry Gillson,	—1st June 1912
Leslie Kenneth Allan	}, —11th June 1912
Edgar Joseph Fisher	
Charles Percival Smith	
Cecil George Cox	

CAPTAIN E. C. TAYLOR, Indian Medical Service, an officiating Agency Surgeon of the 2nd class, is posted, on return from his deputation to the Bacteriological class at Kasauli, as Civil Surgeon, Kurram, with effect from the 5th June, 1912.

CAPTAIN H. W. PIERPOINT, Indian Medical Service, an officiating Agency Surgeon of the 2nd class, is posted as Civil Surgeon in the Khyber Agency and Medical Officer Khyber Rifles, with effect from the 7th June, 1912.

LIEUTENANT T. L. BOMFORD, Indian Medical Service is appointed to officiate as Surgeon Naturalist to the Marine Survey of India, *vice* Captain R. B. S. Sewell, Indian Medical Service whose services have been placed at the disposal of the Home Department for employment under the Government of Bengal, with effect from the 7th June 1912. Lieutenant Bomford is a nephew of Surgeon General Sir Gerald Bomford, I.M.S. (ret'd).

THE services of Captain W. J. Collinson, M.B., I.M.S., are placed temporarily at the disposal of the Government of the United Provinces for employment on plague duty.

THE services of Captain A. M. Jukes, M.D., I.M.S., are placed temporarily at the disposal of the Government of Bengal for employment in the Sanitary Department.

THE following distribution of Principal Medical Officers is notified—Lieutenant Colonel A. E. Tate is posted *ad sub* *pro tem*, 1st (Peshawar) Division.

Surgeon General Crofts, 2nd (Rawalpindi) Division.

Lieutenant Colonel Fletcher officiates for Colonel Hackett, in charge of Abbottabad and Sialkot Brigades.

Colonel Colker, Lahore Division
Colonel Lyons, Sind and Jullundur Brigades
Colonel MacPherson, Quetta Division
Colonel Roe, Karachi Brigade
Colonel Granger, Mhow Division
Colonel Lucas, Jubbulpur and Jhansi Brigades
Surgeon General Colker, Poona Division
Colonel Pike, Bombay Brigade
Colonel Butt, Meerut Division
Lieutenant Colonel Philson, Bareilly, Garhwal and Dehra Dun Brigades, *vice* Colonel Anderson, on leave
Lieutenant Colonel Thompson, Lucknow Division
Colonel Davidson, Allahabad and Fyzabad Brigades, *vice* Colonel Barrett, on leave
Colonel Nichol, Presidency Brigade
Colonel Willis, Secunderabad Division
Colonel Smyth, Secunderabad Brigade
Colonel Tieheine, Bangalore and Southorn Brigade
Colonel Helm, Burma Division
Lieutenant Colonel Fooks, Aden Brigade, *vice* Lieutenant Colonel Cleveland, on leave
Colonel Evans, Kohat Brigade
Lieutenant Colonel Daly, Derajat and Bannu Brigades.

MAJOR EARLE, I.M.S., is granted an extension of leave pending orders of retirement.

CAPTAIN WHITMORE, I.M.S., is granted an extension of leave to the 13th of July 1912.

ON transfer to the Central Provinces Captain A. E. Gusewood, I.M.S., relinquished charge of the office of Plague Medical Officer, Delhi, on the afternoon of 13th May 1912.

MAJOR R. HEARD, I.M.S., Professor of Midwifery, Medical College, Lahore has been permitted by His Majesty's Secretary of State for India to convert the period from 3d February to 16th March 1912 of the furlough granted to him in Government of India, Home Department, notification 560, dated the 23rd July 1911, into study leave.

CAPTAIN R. B. LLOYD, M.B., I.M.S., is appointed to be a probationer in the Chemical Examiner's Department and is attached to the Chemical Examiner's Laboratory, Calcutta.

THE Commander in Chief in India is pleased to make the following appointments—

Captain J. W. Dunn, R.A.M.C., to be specialist in electrical science, 5th (Mhow) Division, with effect from the 1st May 1912.

THE Commander in Chief in India is pleased to make the following appointment—

Major G. Bidie, Indian Medical Service, to be a specialist in Advanced Operative Surgery, 6th (Poona) Division, with effect from 14th May 1912.

CAPTAIN A. S. LESLIE, M.B., I.M.S., Superintendent of the Insein Central Jail is transferred to the charge of the Rangoon Central Jail, in place of Captain H. H. G. Knapp, M.D., I.M.S., proceeding on leave.

Captain C. H. Fielding, M.B., I.M.S., on the completion of his training is appointed to officiate as Superintendent of the Insein Central Jail, in place of Captain A. S. Leslie, M.B., I.M.S., transferred.

UNDER the provisions of articles 260, 233 and 308 (b) of the Civil Service Regulations privilege leave to the amount due combined with furlough out of India for one year and three months is granted to Captain H. H. G. Knapp, M.D., I.M.S., Superintendent, Rangoon Central Jail, with effect from the date on which he may avail himself of the privilege leave.

CAPTAIN H. H. BROOME, M.B., I.M.S., Professor of Anatomy, Medical College, Lahore, is, with effect from the 1st October 1912, granted furlough for six months with study leave for six months in continuation.

In the Home Department Notification No. 436, dated the 17th May 1912, regarding the grant of leave to Lieutenant Colonel C. Dool, M.B., F.R.C.S., I.M.S., for "2nd May 1912" read "1st May 1912".

In the Home Department Notification No. 438 dated the 17th May 1912, announcing that Major H. A. Smith, M.B., I.M.S., held temporary charge of the current duties of the Civil Surgeon, Simla (West), for "2nd May 1912" read "1st May 1912".

CAPTAIN H. W. PIERPOINT, I.M.S., an Officiating Agency Surgeon of the second class is posted as Civil Surgeon, Kurram, with effect from 8th May 1912.

ON being relieved of his duties as Officiating Civil Surgeon, Darjeeling, Captain F A F Barnardo, I M S, is allowed privilege leave combined with study leave and furlough for two years six months and three days viz privilege leave for three months under Article 260 of the Civil Service Regulations, study leave for nine months and three days under Rules 2 and 6 of the study leave rules, and furlough for the remaining period under Article 308 (b) of the Civil Service Regulations, with effect from the forenoon of the 29th May 1912

Notification No 4631st Medl, dated the 31st May 1912, is hereby cancelled

ON the transfer of Major Weinman I M S, to Bengal Captain N IV Mækuorth, I M S, was appointed Civil Surgeon of Purnea

CAPTAIN J C S OXLEY, F R C S Ed, I M S was on study leave from 15th January to 3rd April 1912 Captain Oxley was promoted to be Major with effect from 28th December 1911

CAPTAIN N M WILSON, I M S, joins the Civil Medical Department, Punjab

MAJOR G MCG SMITH, I M S, was granted leave, with effect from 1st October 1912, for one year and 17 days

MILITARY ASSISTANT SURGEON H W V COX was granted three months' privilege leave from 7th May 1912

CAPTAIN P S MILLS, I M S, was granted six weeks' privilege leave from 1st June, and Dr K A Rahman two months' leave from 31st May 1912

WITH reference to Punjab Government Notification No 173, dated 11th April 1912 Captain R A Chambers, I M S, is appointed Superintendent, Borstal Central Jail, Lahore, with retrospective effect from 1st October 1910 to 22nd November 1910

CAPTAIN W T FINLAYSON I M S, is appointed Superintendent, Borstal Central Jail, Lahore, *sub pro tem*, with retrospective effect from 23rd November 1910

MILITARY ASSISTANT SURGEON H J J GARROD I S M D, Civil Surgeon, Etah, privilege leave for one month, with effect from the 5th June 1912, on the date of relief

LIEUTENANT COLONEL L G FISCHER, I M S, Civil Surgeon, Delhi Dun, privilege leave for six weeks, with effect from the date of relief

CIVIL ASSISTANT SURGEON KASHI NATH, attached to the Sadi dispensary, Etah, to hold civil medical charge of the district, in addition to his own duties, *vice* Military Assistant Surgeon Gairod, I S M D, Civil Surgeon, granted leave

THE Civil Surgeon, Mainpuri, to hold the visiting medical charge of the Etah district, *vice* Military Assistant Surgeon Gairod, I S M D, Civil Surgeon, granted leave

CAPTAIN C G SEYMOUR I M S, Medical Officer, 2nd King Edwards Own Gurkha Rifles, Delhi Dun, to hold charge of the civil medical duties of the district in addition to his own duties, *vice* Lieutenant Colonel Fischer, granted leave

SURGEON GENERAL A CROFTS, I M S, C I E, has been granted 197 days' continued leave

CAPTAIN A W COOK, I M S, has been granted three months' leave

LIEUTENANT COLONEL E R W C CARROLL I M S, made over charge of the Dibrugarh Jail to Major A Leventon, I M S, on the afternoon of the 8th June 1912

CAPTAIN A CAMERON, I M S, Officiating Civil Surgeon of Rae Bareilly, is deputed to Kasauli for training in clinical bacteriology and technique

CIVIL ASSISTANT SURGEON KHARAG BAHADUR SINGH, Kurki, attached to the Sadr dispensary at Rae Bareilly to hold civil medical charge of that district in addition to his other duties, *vice* Captain A Cameron, I M S

MAJOR G T BIRDWOOD, I M S, Civil Surgeon of Lucknow to hold visiting medical charge of the Rae Bareilly district during the absence of Captain Cameron on deputation at Kasauli

CAPTAIN E BISSET I M S, on plague duty, Meerut, to officiate as Deputy Sanitary Commissioner, 1st circle, United Provinces, *vice* Major S A Harriss, I M S

CAPTAIN C L DUNN I M S, Officiating Deputy Sanitary Commissioner, United Provinces, whose services have been permanently placed at the disposal of this Government by the Government of India, to be confirmed in that appointment, *vice* Major J C Robertson, I M S

MAJOR S A HARRISS, I M S, Officiating Sanitary Commissioner, United Provinces to be confirmed in that appointment, with effect from the 26th June 1912

CAPTAIN J S O'NEILL, I M S, whose services have been temporarily placed at the disposal of this Government by the Government of India, to be employed on plague duty in the Ghazipur district

THE date of Colonel D French Mullen's retirement is gazetted as 25th March 1912

Captain to be Major, I M S
Leonard Joseph Montagn Deas, M B, F R C S E Dated 28th December 1911

NOTE.—The promotion of the undermentioned Majors to their present rank, notified in the *London Gazette* of 22nd March 1912 has effect from 28th December 1911, and not from 28th January 1912, as therein stated —

James Drummond Graham, M B
Cuthbert Allan Sparrowson, M D
Maxwell MacKellie M B, F R C S E
William Henry Cazaly, M B
Walter Valentine Coppinger, M D, F R C S I
William Mitchell Houston, M B
William David Achoson Keys, M D
Alexander Chalmeis M B, F R C S I
Samuel Robert Godkin, F R C S I

In the April Army List the date of rank was shown as 23th January 1912 instead of 28th December as now collected. Their first commissions are dated 28th June 1900

Gazette of India, June 4th, 1912 —

THE following promotions were gazetted in Senior Assistant Surgeons with the honorary rank of Lieutenant to be Senior Assistant Surgeons with the honorary rank of Captain, dated 12th March 1912

Daniel O'Connell Murphy
Valentine Vincent Chiodetti
To be Senior Assistant Surgeons with the honorary rank of Lieutenant, dated 12th March 1912
1st Class Assistant Surgeon Reginald Alexander Bæmel
1st Class Assistant Surgeon Henry Lovell William Clark

THE services of Lieutenant Colonel J R Roberts, C I F Indian Medical Service (Bengal), an Agency Surgeon of the 1st class, are placed at the disposal of the Home Department, with effect from 11th April 1912

MAJOR F A SMITH Indian Medical Service (Bombay), an Agency Surgeon of the 2nd class, is posted as Residency Surgeon at Indore, and Administrative Medical Officer in Central India with effect from the 11th April, 1912

This due to Lieutenant Colonel Roberts having become Surgeon to H E the Viceroy

IN supersession of the Home Department Notification No 237, dated the 3rd May 1912, Captain F A Barker, M B, I M S, Superintendent of the cellular and female jails, and Civil Surgeon, Port Blair, is granted privilege leave for two months and nineteen days, with effect from the 15th July 1912 or any subsequent date on which he may avail himself of the leave

WITH reference to the notifications quoted previously the promotion to the present rank of Major Ernest Reinhold Rost, I M S, published in Army Department Notification No 74, dated the 31st January 1908 is antedated from the 29th January 1908 to the 29th July 1907

THIS means that Major Rost has got his well earned accelerated promotion

MAJOR C M MATHEW, I M S, Medical Officer, 92nd Punjab, is appointed to officiate as Medical Storekeeper to Government, Calcutta, *vice* Major W D Hayward, M B, I M S, appointed to act as Medical Storekeeper to Government, Madras, during the absence of Major W G Richards, M B, I M S, granted leave, with effect from the 25th March 1912

THE services of Major W H Ogilvie, M.B., I.M.S., are placed temporarily at the disposal of the Director of Temporary Works, Delhi.

CAPTAIN B HIGHAM, I.M.S., and Captain A F Hamilton, M.B., I.M.S. respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner Central Registration District, on 4th June 1912 after office hours.

DOCTOR J H WAISH and Major Thomas Jackson, I.M.S., respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner Gujarat Registration District on 5th June 1912 after office hours.

ON the termination of his course of instruction in Clinical Bacteriology and Technique at the Central Research Institute Kasauli, Lieutenant J Robertson, I.S.M.D., Civil Surgeon is granted, under Article 260 of the Civil Service Regulations, privilege leave for twenty nine days.

ON relief by Military Assistant Surgeon F C Cutler, on return from privilege leave 3rd grade Civil Assistant Surgeon W Venkat Ramanna, Officiating Civil Surgeon, Bhandara is re posted to the charge of the Main Dispensary, Bhandara.

ON relief by Captain M F Renner, M.B., I.M.S., on return from leave 3rd Class Military Assistant Surgeon A R Emmett, Officiating Civil Surgeon, Akola, is posted to Ellichpur as Sub Divisional Medical Officer.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments—

Major G E Stewart, M.B., F.R.C.S. (E) I.M.S., to act as Deputy Sanitary Commissioner Central Registration District, during the monsoon, in addition to his own duties as Superintendent of Mahabaleshwar.

Major C C Munson F.R.C.S. (E) D.P.H., I.M.S., to act as Deputy Sanitary Commissioner, Gujarat Registration District in addition to his duties as Superintendent of Mathuran.

WITH reference to Government Resolution No 2497, dated the 19th April 1912, His Excellency the Governor of Bombay in Council is pleased to depute Captain J Munson, M.B., I.M.S. on special duty in connection with the investigation into the causes of diarrhoea at Poona during the rains, with effect from the 17th April 1912.

THE following notification by the Government of India, Department of Education (Sanitary), is republished—
No 991, dated the 30th May 1912.

Captain F N White M.D., I.M.S., is appointed to hold charge of the current duties of the office of the Director, Bombay Bacteriological Laboratory, in addition to his own special duties with effect from the date on which he assumes charge of these duties.

THE following notification by the Government of India, Department of Education (Sanitary), is republished—
No 998, dated the 23rd May 1912.

Captain J Munson, M.P., I.M.S., is appointed to the Bacteriological Department, sub *pro tem*, with effect from the 1st September 1911.

MAJOR E S PECK, I.M.S., the Civil Surgeon of Jullundur was transferred to Lahore as Civil Surgeon and Professor of Forensic Medicine, relieving Lieutenant Colonel W Ronaldson Clark, I.M.S., gone on leave.

CAPTAIN T D MURISON I.M.S., on plague duty, Azamgarh, got three months' privilege leave from 10th June 1912.

CAPTAIN W D WRIGHT, I.M.S., officer employed on plague duty Ghazipur, to hold charge of the office of the officer on plague duty, Azamgarh, in addition to his other duties, *vice* Captain T D Munison, I.M.S., granted leave.

CAPTAIN LEI I.M.S. Civil Surgeon, Dinajpur, was granted leave on medical certificate after recovery from an attack of cholera and Major C Weinman, I.M.S., whose services have been transferred from Behar and Orissa to Bengal, has been appointed Civil Surgeon, Dinajpur.

THE Commander in Chief in India is pleased to make the following appointments—

Major A N Fleming, I.M.S., to be a specialist in Ophthalmology 9th (Secunderabad) Division, with effect from 10th May 1912.

CAPTAIN D H RAI, I.M.S., to be in charge of the Brigade Laboratory at Secunderabad, with effect from 6th May 1912.

LIEUTENANT COLONEL J CHAYTOR WHITE, I.M.S., has been granted six months' extension of leave on medical certificate. He went on leave on 26th March 1910 and has already had two extensions of leave on medical certificate.

LIEUTENANT COLONEL W H E Woodwright, I.M.S., Civil Surgeon, Bareilly, privilege leave for six weeks, with effect from the 3rd June 1912, or the date of relief.

CAPTAIN W E BRIFRLY, I.M.S., Medical Officer 17th Cavalry, Bareilly, to hold civil medical charge of the district in addition to his military duties, *vice* Lieutenant Colonel Woodwright, I.M.S., granted leave.

MAJOR R P WILSON, I.M.S., Captain L Cook, I.M.S. and Captain R M Carter, I.M.S., have been admitted Fellows of the Royal College of Surgeons, England.

LIEUTENANT COLONEL HENRY SMITH, M.D., I.M.S., V.H.S., was appointed a Civil Surgeon, 1st Class, from 4th April 1912, *vice* Lieutenant Colonel A W T Buist, I.M.S., on leave.

WITH reference to the notification of the Government of India in the Department of Education, No 597, dated the 18th April 1912, Major E L Perry, I.M.S., assumed charge of the office of Chief Malarna Medical Officer, Punjab, on the forenoon of the 29th April 1912, relieving Lieutenant Colonel S Browning Smith, I.M.S., of the additional charge.

WITH reference to the notification of the Government of India in the Department of Education No 598, dated the 15th April 1912, Captain H G S Webb I.M.S., assumed charge of the office of the Deputy Sanitary Commissioner Punjab, sub *pro tem*, on the forenoon of the 16th April 1912, relieving Major W O H Foister, I.M.S., of the additional charge.

HIS Excellency the Governor in Council is pleased to appoint Lieutenant Colonel B B Grayfoot, M.D., I.M.S., on reversion, to be Civil Surgeon, Karachi, *vice* Major H Bennett M.B., C.M., B.Sc. (EDIN.), F.R.C.S. (E), I.M.S., on deputation.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "*The Indian Medical Gazette*," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED—

Rawlin's Landmarks of Surgery (Billiere Tindall & Cox)
Walsh's Golden Rules of Skin Practice (John Wright & Sons)
Moylan's Duodenal Ulcer (W B Saunders & Co)
Sunder's Tumours of the Jaws Price 2s (W B Saunders & Co)
H Kelly's American Medical Biography 2 Vols Price 4s (W B Saunders & Co)
G Sunder's Modern Methods of Nursing Price 12s (W B Saunders & Co)
The King Institute Report
Short's The New Physiology in Practice (John Wright & Sons)
Dighton's Disease of Naso Pharynx (Billiere, Tindall & Cox) Price 10s 6d not
D McKail's Public Health &c John Wright & Sons
Blumfield's Anaesthetics (Third Edition) Billiere, Tindall & Cox
H O Ross Cell Reproduction and Cancer (Vol II) 3s 6d (J Murray)
Punjab Lunatic Asylum Report
Stretchor Drill for Women (Londor & Sons) (Price 3d)

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM—

Capt W G Hamilton, I.M.S., London Lt Col D G Crawford, I.M.S. London Lt Col Bruce Seton I.M.S. Simla Dr L Fluk, Burma Dr J Davidson, Mysore Major Woolley, I.M.S., Andamans Capt H Steen, I.M.S., Calcutta, Lt Col Anderson, I.M.S., Chittagong, Col Neil Campbell, I.M.S. Shillong, Major Mathews I.M.S. Dehra Dun Lt Col Hodge, I.M.S. Hongkong, Capt J Husband, I.M.S., Major Clifton, I.M.S., and Major Clayton Leno I.M.S., Berhamporo.

Original Articles

RECENT FACTS AS TO INOCULATION AND THE PREVALENCE OF ENTERIC AND PARATYPHOID FEVERS IN THE EUROPEAN ARMY OF INDIA

By COLONEL R. H. FIRTH, FRCS, VHS
ROYAL ARMY MEDICAL CORPS,
Assistant Director, Medical Services

It is common knowledge that during recent years there has been a notable reduction in the prevalence of and mortality from enteric fever in the European Army of India. The following table gives the essential facts —

YEAR	Number of cases of enteric and paratyphoid fever	Number of deaths from enteric and paratyphoid fever	Case mortality per cent
1897	2 050	556	27.1
1902	1 012	260	25.7
1907	910	192	21.1
1908	995	191	19.8
1909	639	113	17.7
1910	335	46	13.8
1911	274	24	8.8

To arrive at a correct appreciation of the situation it is necessary to realise (1) that since 1910, a differentiation has been made between enteric fever and paratyphoid fever, (2) that since 1906, steady progress has been made in pushing the practice of inoculation in the European army, (3) that in 1908, the enteric dépôt at Nam Tal was opened and that in 1909, the enteric dépôt at Wellington was opened, and to one or other of these dépôts all cases convalescent from enteric fever, paratyphoid fever, and from pyrexia of uncertain origin, which, in spite of not being diagnosed as either E F or P F, have presented clinical evidence that they may have been one or the other are sent and detained until after repeated technical examination of their excreta, it is certain they are free from potential infection. Each of these disturbing factors call for notice.

(1) In 1910, we first began to diagnose paratyphoid fever. In that year we detected 39 cases and had one death. In 1911 we had 104 cases with two deaths. In every case the diagnosis was made on the fact that the specific bacillus was isolated from the case and in no single case during these two years has a diagnosis been made on clinical or serological data only. These facts affect the figures given in the above table, as it means that in 1910 we had only 296 cases of enteric fever and in 1911 only 170 cases of enteric fever.

The disease called paratyphoid fever is probably much more common than many suppose. It is practically a mild form of enteric fever. The incubation period is 10 to 16 days. Early symptoms are headache and lumbar pain, associated often with sore throat and symptoms suggestive of influenza. Fever lasts ten to twelve days. Mortality is low, probably not more than 2 per cent. Relapses are not infrequent. Labial herpes is a frequent symptom. Diagnosis lies between enteric fever and pyrexias of uncertain origin. The Guter-Widal serum reactions are fallacious as specific agglutinins against the paratyphoid bacillus are feebly and only slowly formed. No diagnosis is justifiable on mere serum reactions, and in the army we do not attach any value to them in paratyphoid fever. The only sure criterion is isolation of bacillus. This is done by drawing off 5 c.c. of blood from a vein and immediate culture in suitable medium. The blood should be drawn not later than the fifth day, preferably on the third day. The bacilli appear to be comparatively few in the blood stream and quickly disappear. The infecting bacillus may be that known as B paratyphosus A or B. Our Indian cases are practically all due to the A variety, for out of the 143 cases only one has yielded the B variety and even that is open to suspicion, as the original culture was impure and contained the A variety also. The differentiation of type is made by orthodox subculture in the various sugars, alcohols and glucosides on well known lines, but the critical test is by the absorption method of Castellani. The epidemiology of paratyphoid fever follows largely the circumstances associated with enteric fever. In none of our army cases have we been able to attribute causation to water, milk or food. All our cases have been associated with pre-existent cases, and we regard man himself as the most dangerous and common factor in the spread of this disease. The mildness of the symptoms favours the occurrence of ambulatory cases in communities, and the consequent extension of the disease.

(2) Inoculation of European troops on an organised basis dates from 1906. In that year we had some 5 per cent inoculated, in 1907 the numbers had risen to 15 per cent, in 1908 to 30 per cent, in 1909 to 50 per cent, in 1910 to 70 per cent, and in 1911 to 85 per cent. On the last day of the year, 1911, the census return as to inoculation showed the military rank-and-file population to consist of 60,635 inoculated, 8,477 not inoculated and 2,062 men who had had enteric fever at some time or other.

The influence of inoculation on enteric fever incidence and mortality is shown by the following figures for 1911. Among the inoculated, we had 106 cases and 11 deaths equivalent to an admission rate of 1.7 per mille, a death-rate of

0.17 per mille and a case mortality rate of 103.7 per mille or 10.37 per cent. Among the non-moculated we had 64 cases with 11 deaths, equivalent to an admission rate of 6.7 per mille, a death-rate of 1.15 per mille and a case mortality rate of 171.8 per mille or 17.18 per cent.

These facts clearly indicate the influence of inoculation in lowering the incidence of enteric fever and very emphatically lowering the case mortality. The case mortality from enteric fever among a non-moculated population treated in the London Fever Hospitals is 16 per cent. Our army returns show the rate among the non-moculated to be 17 per cent or much the same, while among the moculated it is as low as 10 per cent.

The influence of inoculation on paratyphoid fever appears to be negative. Our returns for 1911 show, among the moculated, 97 cases with 2 deaths, equivalent to an admission rate of 1.57 per mille, and a case mortality rate of 20.7 per mille or 2 per cent. Among the non-moculated we had 7 cases with no deaths, equivalent to an admission rate of 0.73 per mille.

If we take the two diseases together and call them all "enterica," we revert to a nomenclature and statistical facts comparable with early army returns. Taking both diseases together we find in 1911 we had among the moculated 203 cases with 13 deaths, equivalent to an admission rate per mille of 2.75 and a death-rate of 0.17 per mille, and a case mortality rate of 6.4 per mille or 6.4 per cent. Among the non-moculated there were 71 cases with 11 deaths, equivalent to an admission rate of 10.88 per mille, a death-rate of 1.17 per mille, and a case mortality rate of 15.7 per mille or 15.7 per cent.

(3) While much importance is rightly attached to the value and influence of inoculation in reducing both incidence and mortality from enteric fever, we probably owe much of our recent successful control of this disease and also of the cognate infection known as paratyphoid fever to the two enteric depôts. The functions of these has been explained. Since these depôts were opened out of 1,229 cases of enteric fever no less than 13 cases of chronic carriers of infection, and 13 cases of acute or temporary carriers of infection have been detected. A chronic carrier is held to be a man who excretes the bacillus for any period over six months. These facts show 2 per cent of carriers from enteric fever, roughly 1% chronic and 1% acute. On the other hand, out of 124 cases of paratyphoid fever, 1 chronic carriers and 17 temporary or acute carriers have been detected. This gives from paratyphoid fever not less than 14 per cent of carriers, or roughly 1% chronic and 13% acute. The inference is justifiable that the risks attaching to paratyphoid, qua possible human carriers, is seven times as great as in enteric fever. This aspect of

the epidemiological problem of this disease has been previously mentioned.

Had the old system prevailed and no enteric depôts existed, these 26 enteric carriers and these 18 paratyphoid carriers would have gone back to their barracks at once on discharge from hospital. The aftermath of cases from these 44 men, assuming that each infected but three other individuals, amounts by the third generation to as many as 1,188 cases. From this point of view, we attach the first importance to the existence of the enteric depôts and the elaborate technique there carried out for the detection of potentially infective individuals.

The lessons which seem warranted by these facts drawn from the experiences of the European army in India in recent years are these: (1) Inoculation against enteric fever should be universal, in that it affords definite protection against both attack and death from enteric fever. (2) That amongst us is an insidious disease known as paratyphoid fever. Fortunately it is rarely fatal, but unfortunately very infective and mainly so by the agency of man himself. The early detection of these cases is vital, and once detected should involve a technical examination of all associated persons. (3) That the systematic examination of all convalescents from both enteric and paratyphoid fevers is necessary before their return to a free communal life. This examination being highly technical involves the initiation for civil communities of a highly trained personnel, such as has been evolved in army life for the control of enteric infection in the military population.

DETAILS OF VISION OF 132 CASES OF INTRACAPSULAR EXTRACTION OF CATARACT

By HENRY SMITH M.B. M.Ch.,

LIEUT. COL., I.M.S.,

Honorary Surgeon to His Excellency the Viceroy

MR. EASON in the July number of the *Lancet* 1911, writes a paper on Cataract Extraction, the basis of which is not his own personal experience but a paper published in the Royal London Ophthalmic Hospital Reports, Volume 16, Part 3 October 1905, by Mr. E. Treacher Collins and a paper by Mr. Charles Higgins (*Lancet*, 13th April 1907), and a paper published by Major Kilkelly in the *Indian Medical Gazette* of May 1910 on twenty-three cases operated on by me in his hospital in Bombay, while at the Bombay Medical Congress, and on my Monograph on the treatment of Cataract.

He complains that I have not published details of any series of cases. He puts the results of these Bombay cases against the results of Mr.

Treacher Collins and Mr Higgins in their papers above noted. It should be observed that Mr Collins' cases and Mr Higgins' cases received their after-treatment from their operators, and were reported on by their operators, and that my twenty-three cases were not under me but under Major Kilkelly, and were reported on by Major Kilkelly, so far the conditions are not analogous. It should also be observed that they were reported on by Major Kilkelly and Dr Pontius hostile witnesses a fact which will be at once apparent to any one who reads the controversy which followed. It is strange that Mr Eason read Major Kilkelly's paper and quotes it as beyond criticism but happens not to have read the remainder of the controversy in which these twenty-three cases were wiped out as of absolutely no scientific importance, neither does he quote the results of the thirteen cases I happened to have in hospital in the middle of the hot weather when I first replied to Major Kilkelly and which were reported in the *Indian Medical Gazette*, July 1910. The details of these are included in the 132 cases now reported on. The details of my remaining 119 cases noted below are as follows.—In my recent slack season I did these cases *myself* (in the busy season I put all cases except complicated ones at the disposal of my pupils) with a view to writing this paper. The eyes were selected by me before operation as normal in every respect apart from cataract. I selected one hundred and fifty thus for operation. Of these 119 turned up for examination. The remaining thirty-one, when the dressings were removed at the end of ten days, were just the same as the rest, and were to be brought to my bungalow in the evening for examination, but, as is so usual with the native patient, when the dressings were removed, they slipped away to their villages without informing the hospital staff. It is, therefore, not to be inferred that the eyes of these 31 patients were in any way better or worse than those examined.

They were examined for vision from ten to twenty-one days after operation. They were examined partly by myself, and partly by my wife, who is a member of the profession and an ophthalmologist. A diaphragm was used behind the lens in all these cases in order to get the stupid patients to look through the proper part of the lens and also to shut off the glare which is much more trying in the intracapsular operation than in the capsulotomy one in the early stages owing to the clearer medium and consequently brighter light that reaches the retina.

Mr Treacher Collins referring to his results in the capsulotomy operation says: "The writer doubts if by any other procedure for the removal of cataract full vision could be obtained in twenty-five per cent of the cases with one operation." This is as much as to say that the world we live in is the best of all possible worlds. I quite agree

with Mr Treacher Collins as far as the capsulotomy operation is concerned, but, considering that the intracapsular operation had been prominently brought before the profession at the annual meeting of the British Medical Association of 1903 and proved to be an eminently satisfactory and feasible operation, Mr Treacher Collins' position is surely pessimistic.

Let us see the relative merits of this operation. In my 132 cases below noted, there was one prolapse of iris, one iris caught in one angle of the wound and in three cases the cornea was slightly hazy. There were no drawn-up pupils. There was no case of iritis nor of irido-cyclitis. There was vitreous escape (a head) in three cases. There was capsule left behind in one case (this case had $\frac{1}{2}$ vision). There were no other complications.

DIAPHS OF VISION

Distant vision tested in 132 Cases

$\frac{6}{12}$	$\frac{6}{9}$	$\frac{6}{6}$	$\frac{6}{5}$	$\frac{6}{4\frac{1}{2}}$	$\frac{6}{4}$
2	3	26	22	61	16

Two were so stupid that though they could see distant objects and details of them well, we could not get them to understand what we wanted.

Details of 119 cases in which near vision was tested —

Jaeger I	Thread needle with great ease	Thread needle	Thread needle with difficulty
10	14	81	9

The same two above noted were too stupid to get anything out of them.

Those tested with Jaeger type were English speaking, the others could not read Roman nor Urdu character. They were tested for distant vision with bull's-eyes, and for near vision the test used for them was to thread an ordinary cambric needle (not a darning or packing needle). The people who threaded a needle with ease were intelligent women and tailors. These under classes "Thread needle" and "Thread needle with difficulty" were most of them old people, not accustomed to thread needles and a number of them with shaky hands. It took on an average twenty minutes to make them understand what we wanted them to do. The intelligent people could tell us at once what they could and what they could not see—the others would try the patience of a Job. Threading a needle requires more senses than sight and is thus more difficult than reading Jaeger I, but, it was the most exacting test we could think of.

The lenses used were from plus 9Dsp to plus 11D for distance. For near distance mostly plus 13Dsp, a few required plus 14Dsp.

The patients were not examined for astigmatism, but my experience is that the astigmatism in these cases averages about 0.75D.

Mr Eason attributes the superior vision of Mr Treacher Collins cases over that of Mr Higgins' and others to the absence of anterior capsule in the former cases. By parity of reasoning the superior vision obtained in my cases is due to the entire absence of capsule both anterior and posterior, and to this also is due the absence of complications in my cases.

Mr Higgins gives us full details of the vision of his 130 cases, but it is not fair to compare these either with Mr Treacher Collins cases or with mine as they were not selected before operation. But it is quite fair to compare mine with Mr Treacher Collins who states that his were selected as uncomplicated senile cataracts but he only gives the general statement that 25 per cent of them had vision equal to $\frac{6}{6}$ without needling and that he does not needle if the patient has vision = $\frac{6}{18}$ or better.

Considering that Mr Higgins' cases were unselected and contained the usual proportion of eyes operable, though diseased apart from cataract, his results seem to me to be as good as the first class operator, by the capsulotomy method, may expect. Mr Treacher Collins states that his two hundred cases were selected as uncomplicated apart from cataract—Mr Eason in his comparison does not note this important fact. Mr Treacher Collins gives us no idea as to the time after operation at which his visual results were obtained—an all-important fact in cases in which the capsule is left behind owing to the steadily growing obstruction of light by the capsule. For

example, cases whose vision is $\frac{6}{6}$ a fortnight or three weeks after operation will seldom be more than $\frac{6}{12}$ after a year and $\frac{6}{18}$ after two years, which latter, according to Mr Treacher Collins does not require needling. This opinion indicates in itself that needling is regarded as an operation of considerable risk when operators by the capsulotomy method are satisfied with such poor vision. Mr Treacher Collins designates $\frac{6}{6}$ as full vision. In my observation

$\frac{6}{4\frac{1}{2}}$ or $\frac{6}{4}$ is much nearer normal or full vision.

In cases of intracapsular extraction the reverse order occurs, as after three months and

more the vision is much better than it is at the end of three weeks, owing to the patient being less sensitive to glare, and owing to the cornea having resumed its normal transparency. This is shown by a comparison of the 61 of my cases (uncomplicated apart from the escape of vitreous) which were kindly examined for me and reported on by Captain Lister from one to five years after operation—

$$\frac{6}{3} = 4 \quad \frac{6}{3\frac{1}{2}} = 6 \quad \frac{6}{4} = 4 \quad \frac{6}{4\frac{1}{2}} = 5$$

$$\frac{6}{5} = 4 \quad \frac{6}{6} = 33 \quad \frac{6}{8} = 2 \quad \frac{6}{9} = 3$$

total 61

These visual results were obtained with spherical lenses. A number of them are better than any reported on in my recent list. Fifty-six out of sixty-one cases range from $\frac{6}{3}$ to $\frac{6}{6}$ with one operation. Of the 132 cases above noted examined within three weeks of operation 125 had vision ranging from $\frac{6}{4}$ to $\frac{6}{6}$, almost half of them (61) having vision = $\frac{6}{4\frac{1}{2}}$. Of the remaining seven two were too stupid to get details out of them though they had good vision. Three had lazy corneas which would clear up and then vision = $\frac{6}{9}$ one had capsule left behind and his vision was $\frac{6}{12}$. One had $v = \frac{6}{12}$ and was to all appearance otherwise normal.

How does Mr Treacher Collins' assertion stand in the face of these facts?

In intracapsular cases it is very important to impress on the patient that he should not use his eye for any exacting work for three months after operation, as they are liable to show signs of irritability from such causes. A case recently came before me, a European lady who was given a shade at the end of fourteen days. On the 15th day she complained of considerable irritation and photophobia and general congestion was evident. In trying to discover the cause of this I found out with some difficulty that she had spent the previous evening with a hand lens reading an illustrated paper and examining the pictures. A few leeches to the temple and exclusion of light for a few days set matters all right. In connection with the after-treatment of intracapsular extraction cases I wish to point out that the first dressing should not be removed for

ten days Both eyes should be bandaged in order to reduce the movements of the eyeball to a minimum. The patient should be carefully carried to bed and should rest on his back for twenty-four hours, and throughout should have a light diet. After four days he may be allowed to sit up in a chair. After ten days the first dressing should be removed, the lids carefully cleansed so as to avoid putting any pressure on the eyeball even then, though our Indian patients leave us owing to lack of accommodation—I much prefer to have the operated eye bandaged up from 5 to 8 days longer without inspection. This is what my senior assistant terms ‘No after-treatment.’ Daily dressing and inspection and the use of drops such as is necessary in the capsulotomy operation are not only not necessary in the intracapsular, owing to the absence of complications connected with capsule left behind, but are very detrimental and are the cause of many failures. I cannot impress this fact too strongly on those who are commencing this operation. People who follow this method of after-treatment will find that prolapse of the iris will be much rarer than it would otherwise be. Dressing a general surgical wound every day would be called meddlesome surgery and would be courting complications. Let any one read a detailed statement of a series of cases of the capsulotomy operations by a few of the most leading cataract operators, and compare the number of cases of post operative glaucoma, of iritis, of uido-cyclitis, of after-cataract, that have to be dealt with, and of the glaucoma and uido-cyclitis (which are frequently associated with the needling of after-cataract), all of which are unquestionably due to lens matter and capsule left behind, and compare these facts with the absence of these complications in intracapsular extraction, and I think he will come to the conclusion that, apart from the superior vision obtained by the intracapsular method, the latter is, from every point of view, much the more surgical procedure. One of my pupils, an experienced operator by the capsulotomy method, writes to me, ‘The beginning, the middle, and the end of all our troubles are capsule left behind. Another writes to me ‘I now look on capsule left behind as I do on fragments of stone left behind in the bladder after litholapaxy, namely, that I have done an incomplete operation. Mr Eason says, Time alone will show whether the latter operation (intracapsular extraction) will be generally adopted, or whether its success depends alone on the peculiar dexterity of Lieutenant-Colonel Henry Smith himself. Time is already showing that the success of this operation does not depend on the peculiar dexterity of any man. It is being extensively practised in India and is rapidly extending and threatens to render the capsulotomy operation is nearly extinct as

litholapaxy has rendered lithotomy in India. (Only a few of my pupils have commenced to write, the others will do so in due course. Time is also showing that the demand of the people of India is for this operation owing to the superior results obtained by it, as evidenced by the steady increase in numbers in the hospitals in which this operation is performed and the stationary or declining position of the hospitals in which the capsulotomy operation is the operation of election although very few patients know what operation is performed, while the dexterity of the operators by the capsulotomy method in India is probably unsurpassed by any one in the world owing to their vast experience. That it will eventually be adopted outside India, is another matter. The operators outside India who have not had a special course of training in the manipulative art connected with it, or the operator, who has not had such training and whose experience is limited to a hundred cataracts a year or less will be well advised to avoid this operation. India should shortly be able to supply the British Empire with skilled operators able to teach this art.

One of the leading ophthalmologists of the world not in India, after having spent several days with one of my pupils seeing his operations and seeing his results wrote to him after leaving—‘Intracapsular extraction of cataract is destined to be the operation of election. I can see that the time is coming when extraction of cataract will become a speciality within the speciality of ophthalmology, and that it will be limited to a few men.’

A CHOLERA SEASON—SOME OBSERVATIONS, METHODS AND RESULTS

By T. H. BISHOP, M.R.C.P.

(Chief Medical Officer of the Lower Ganges Bridge Project.)

In the April number of this Gazette reference was made to the measures which had been adopted to deal with cholera and prevent it, if possible, taking on an epidemic form in the villages adjacent to the labour forces and amongst the coolies engaged upon the construction of the bridge across the Lower Ganges. Our chief cholera season coincides with the greater part of the earthwork coolies' working season which closes about the end of June. The results of the first season of this work are, I think of sufficient interest to them recording.

FACTORS IN CHOLERA DISSEMINATION

It is a matter of common knowledge that the upanjan villages in this part of Bengal suffer severely from frequent epidemics of cholera, and with the extensive land purchases made by

Government in connection with the Lower Ganges Bridge and its approaches, this sinister heritage was apparently passed on. Preparatory to the utilisation of sites for bungalows, quarters, coolie paras, etc., a thorough clearing of old village areas was carried out, and with the completion of buildings, roads and many miles of permanent-way the two chief constructional divisions of the project Paksey and Bahmchur came into being.

The first big task to which the attention of the engineering staff was directed was the construction of the two "Guide bunds" between which the river is "tramed" when approaching the bridge and which are designed to prevent erosion of the banks in its vicinity. For such labour a large coolie force, imported and local, was employed, and it was natural that the work being on the river banks, contractors should hut their coolies close to the river where possible.

Moreover, facilities for bathing in, and obtaining then drinking water from, the Ganges are precious to all Hindus and their religious predilections have received the support of Hankin's conclusions—still, to some extent, relied upon—as to the improbability of this river being an agent in the dissemination of cholera.

Our first working season soon convinced us that this conclusion needed modification as cholera broke out in epidemic form in our largest coolie camp situated upon the river's edge and exclusively obtaining water-supplies from the river. Three years of observation have convinced me that in this part of Bengal the river is indeed the chief factor in the spread of cholera although open tanks and ill-constructed, uncared-for wells are factors also. It is not probable that the main current becomes seriously infected, but when the nature of its banks is taken into consideration, it will be easily understood how the river may become the medium by which cholera advances. The volume of water in this part of the Ganges rises and falls with considerable regularity, the difference between high and low flood levels having varied as much as 31 feet in one year. The high flood level occurs usually in August or September, and from that time the fall is continuous until the following March. It is during this fall that the marked changes in the contour of the banks are brought about. Cutting away at one point on one side will be compensated by accretion at another point probably on the other side, resulting in an irregularity which conduces to the formation of more or less stagnant back-waters where erosion has occurred, and to shallow "jheels" where accretion has taken place. Such back-waters and jheels are utilised by villagers for bathing, clothes washing and as sources of their domestic water-supplies whilst the vicinity of these places are too frequently used as latines.

It requires little knowledge of the habits of the native to understand that, given the *matres morbi* the chances are in favour of these places becoming and remaining for that season the medium for the propagation of cholera, in fact until, with the occurrence of the next flood, jheels and back-waters are thoroughly flushed-out or obliterated. Experience suggests that the initial infection is probably due to the "cholera carrier." Presuming his existence the germ may be conveyed directly, or through the washing of soiled clothing, to the general water-supply of a village, and the outbreak follows, incidentally bringing into being a potent agent in the wider propagation of the disease, *viz.*, the cholera corpse. It would seem that in the disposal of dead bodies neither the Hindu nor the Mahommedan villager has hit on wise methods. The Hindu either because of the cost of fuel or of the trouble involved, makes the merest pretence of incineration, often being content with applying a lighted match to the mouth or nostrils as the body lies close to the water's edge. The invariable result is that the corpse reaches the river and is carried down until arrested by some projection of the bank which protects the back-water supply of the next village and there endows any feeble flow from the main stream into such back-water with a fortified strain of comma bacilli. Observations made during successive cholera seasons have convinced me of the effectiveness of the cholera corpse as an agent in the spread of the disease and the undoubted difficulties in connection with the suppression of this widely-adopted practice call for stringent administrative measures.

The practice of Mahommedan villagers in disposing of their corpses, whilst not so pernicious to the general health of the district is equally lacking in wisdom. The Mahommedan's dwelling consists of one or more bamboo and thatched huts with, frequently, a byre, grain store and pot well all enclosed by a bamboo fence eight or nine feet high. It is within this fence and, frequently enough below the floor of the living quarters that a body is buried. The grave being dug six or seven feet, the deeper half is not filled in but is covered by a bamboo partition upon which the earth is placed up to ground or floor level, altogether an admirably designed cesspool the accumulated contents of which are undoubtedly passed on through the ill-made joints of the pot well to the family water-supply. That such practices favour the occurrence and spread of cholera can scarcely be controverted, and the fact that traffic from inland villages is, necessarily, largely to the river ensures its spread inland also.

PREVENTIVE MEASURES

Measures to protect a large labour force in such a district where the working season is a short

one and the necessity for carrying out the season's programme imperative, cannot be restricted to the actual site of the work. Not only does such a force attract local labour but supplies of all kinds divert much traffic towards it, and recognition must be accorded to the danger to the general health both by importations from a distance and by contact with local conditions. Cholera is probably the disease of which the Indian coolie has the utmost dread. It is, therefore, a common enough experience amongst Engineers to lose gangs comprising some hundreds of labourers by desertion in a single night.

The first season's work illustrated the necessity for taking a broad view of our problems and the methods of meeting them. Lack of labour meant delay in carrying out work—the results of which might be incalculable. In reviewing what could only be regarded as a bad start from the hygienic standpoint, two things were seen to be essential, firstly, the institution of such methods of sanitary and medical supervision of the labour force as should prevent isolated cases of disease causing epidemics, and secondly, the betterment of conditions in the surrounding villages. The first condition was met by the systematic daily visitation by medical and sanitary subordinates of all coolie gangs, huts, quarters, etc., and the second by a special scheme which was approved, and financed equally by the local Government and from bridge funds. This scheme placed at my disposal a special staff of Assistant and Sub-Assistant Surgeons for carrying out preventive measures and treatment of cases in the villages within easy access of the two constructional divisions, Paksey and Bahuchui. Roughly, areas of between thirty and forty square miles on either side of the river have been thus brought under supervision. The preventive work consists in systematic visitation of every house in each village for the purpose of instructing the inhabitants as to the nature of cholera, how it usually comes about, and the precautions to be adopted to prevent personal infection. This part of the work, perhaps the most tedious, is I think to be regarded as of great importance. The most profound ignorance of this disease prevails, in spite of the fact that for decades past it has made its frequent appearances in these villages and taken its toll. Probably the only knowledge which has accrued as a result of this experience is an ability for fairly accurate diagnosis. A villager will, in reporting a case often enumerate the typical symptoms of cholera and explain wherein it differs from simple diarrhoea or dysentery. To have the simple rules for preventing infection repeatedly explained to them in their own houses, at their huts and elsewhere in their own language may eventually result in personal effort—perhaps the most desirable end to be attained. Water-

supplies are examined, disinfection of wells and tanks by means of the hypochlorite of calcium carried out, and, where possible, tube wells sunk to provide an accessible supply of good water. The use of nascent chlorine for well disinfection is a distinct advance upon the use of permanganate for the same purpose, the latter acting chiefly as a precipitant, whilst the former is a reliable bactericide. Practically all wells used in this part of Bengal, excluding district board wells, are of the "pot well" type and of an uniform diameter. In order to facilitate disinfection a solution of hypochlorite of lime is made up in a graduated bottle of such a strength that each graduation represents the quantity of chlorine required for one foot depth of water on the basis of 4 grains of the powder to 5 gallons of water. The depth of the well in feet is ascertained by means of a log-line and an equivalent number of graduations of the solution are poured into the well and thoroughly mixed up. This simple method both facilitates the process of well disinfection and obviates possible errors which might occur if calculation of the amount required had to be made at the time of disinfection. It was also hoped to attempt a solution of the difficulty associated with the abandonment of corpses to the river, but owing to the small patch of land required for a burning ghât not being available this matter could not be taken up. The issue of police warnings against this practice has up till now had no effect in checking it.

PRINCIPLES OF TREATMENT AND RESULTS

The introduction of measures, however beneficial, amongst the Indian village population is by no means an easy matter—difficulties of adopting plans to caste ideas, of overcoming objections which depend either on ignorance or fear must be anticipated, whilst "vested interests" are a frequent obstacle. The chief difficulty experienced in our preventive work has been the village Kanyaj—whose income has been largely dependent on a "good cholera season." On the East Bengal side of the river we had the advantage of being able to place our staff in the villages some months before the epidemic season was upon us, with the result that on the occurrence of cases our staff were immediately informed and the treatment adopted had the very best chances of success. Moreover, this treatment secured such an amount of popularity that the headmen of villages frequently requested to be supplied with the pills and mixture used. The result of this was that in this area the disease did not assume epidemic form. In the area on the West Bengal side our staff unfortunately had not the same opportunity of becoming acquainted with their districts and a small epidemic occurred in a large village between which and the bridge a considerable

amount of traffic occurs. This outbreak was immediately taken in hand, and the cause discovered to be a tank from which the poorer people obtained their water.

Precautionary measures, including the sinking of two tube wells, were taken, and the cases which were willing to accept treatment were treated. These measures sufficed to stop the outbreak in six days, whilst neither adjacent villages nor the bridge labour were affected.

The treatment adopted, in all our cases, has been the exhibition of the permanganates as advised by Rogers with adrenalin chloride (1-10,000) in doses of ten minims every three hours until the passage of urine was re-established. For the first three days only barley water with permanganate lotion and occasional



Trocar and Cannula (Bishop)

draughts of boiled water were allowed. In the severe cases of collapse perfusion of hypertonic solution of sodium chloride (Rogers' formula) was given by intraperitoneal puncture made with my special trocar-cannula, as explained in the April number of the *Gazette*.

The results of this treatment are given in the following table—

TABLE I
Cases Treated, Recoveries and Deaths

	No. of cases treated	No. of recoveries	Deaths
<i>Last Bengal area</i>			
Cholera Prevention Scheme	74	67	7
<i>West Bengal area</i>			
Cholera Prevention Scheme	53	43	10
Lower Ganges Bridge Labour Force (Paksey)	39	31	8
Lower Ganges Bridge Labour Force (Bahinichur)	7	6	1
TOTALS	173	147	26

Mortality—15% of cases treated

For comparison the available figures for the same period and areas as given in the Thana records for previous years are tabulated

TABLE II

	Cases	Recoveries	Deaths
Sara Thana	1910	Not available	
Do	1911	312	393
Dumukdia & Mirpur Thanas	1910	116	201
Do	1911	300	140
		1,528	734

Mortality—52%

The figures given in the first column of Table I do not represent the total number of cases which occurred in the whole area, as a number were not notified in time for treatment and others refused to be attended usually at the instance of the Karmaj. Such occurrences were entirely confined to the West Bengal area and records were kept of all cases which occurred. These figures give a total of 199 cases of whom 159 recovered and 40 died—a mortality of under 20%.

A comparison of these two tables is, I think striking enough to prove that work of this character is capable of producing desirable results. There is sufficient evidence available to show that the present year has not been an exceptionally mild one either as regards the character of the disease or the proportion of the population attacked. On a neighbouring "construction" work where some fifteen hundred coolies were engaged cholera occurred during May with the result that, I am informed, out of sixteen cases attacked only one recovered and the entire force deserted.

Again the East Bengal cholera prevention scheme area does not quite coincide with the boundaries of the Sara Thana. For the limited number of villages in the Sara Thana outside our area during the period covered by Table I, 44 cases of cholera were reported with 33 deaths—a mortality of 75 per cent.

As regards the labour on the bridge the results which we obtained from the course of treatment adopted induced a considerable amount of confidence, so that, with the exception of an isolated gang who decamped immediately on the occurrence of two cases amongst them, there has been neither trouble nor serious desertion during the past working season.

Our experience has proved that the advantage of early notification and treatment is incalculable and this is understood when the pathology of cholera is considered. The indications are to deal with the toxins already produced and to stop the serious depletion of the blood. These two objects can be attained by the exhibition of permanganates and adrenalin or pituitrin.

Permanganates given in the form of salol-coated pills reach the intestine and by virtue of their oxidising action cause chemical disintegration of the toxins present. It is useful also to remember that permanganates have the same effect on strychnine, so that if this be given it must be hypodermically and not by the mouth as otherwise it is rendered inert. Adrenalin or pituitrin acts as a vaso-constrictor as well as a heart stimulant the combined action bringing about a rise in the blood pressure which, as pointed out by Drake Brockman, is of the greatest value in overcoming the block so early established in the renal capillaries in cholera.

The intermediate type of case, where the patient was not seen until the symptoms were more advanced, also usually yielded to the same course of treatment, but, probably, the more frequent use of hypertonic injections would prevent many cases of this type subsequently showing signs of collapse. It is in this type of case particularly, that the value of observations on the blood pressure and specific gravity of the blood is demonstrated.

The special feature in which our treatment differs from that adopted in hospitals is in the mode of administration of the hypertonic solution. Coming to the conclusion that the conditions under which our treatment must be carried on did not favour the intravenous route, and finding it difficult to persuade coolies and villagers to submit to the necessary small incisions, I resorted to the intraperitoneal method and devised a special trocar-cannula by means of which the necessary puncture could be made with the least trouble and safely. This plan has been carried out in fifty-nine cases during the past season by various members of my staff and the following table gives the results —

TABLE III

	No of cases treated by intraperitoneal puncture and in- jection of hyper- tonic solution	Recoveries	Deaths
Cholera Preventive Scheme (East Bengal)	9	6	3
Cholera Preventive Scheme (West Bengal)	16	10	6
Lower Ganges Bridge (Paksey)	30	23	7
" " " (Bahuchun)	4	3	1
TOTALS	59	42	17

(Several of the cases treated at the Paksey Hospital occurred in the East Bengal area of the Cholera Prevention Scheme and were transferred to Paksey)

Mortality = 28.8%

In estimating the value of the intraperitoneal route it should be remembered that it is from the intestinal vessels that the drain in cholera immediately occurs, and, further, that the facility which the peritoneum has for absorption is so considerable that this action, as has been proved experimentally by Hamburger, may continue after death. Our own observations have proved that it may be so rapid that, in a previously pulseless patient, the return of the radial pulse has occurred before the short operation is finished. The increase in the blood pressure is, how-

ever, a more gradual process than when the intravenous route is selected, and probably this accounts for the persistence which is usually so satisfactory a feature. It is exceedingly rare for an intraperitoneal injection to require repeating, and my experience is that when repetition is indicated by a continued low blood pressure the case is generally a hopeless one. The process of absorption of fluids from the peritoneal cavity is a complex one—examination of the hypertonic fluid remaining in fatal cases showed it to contain a considerable amount of albumin, whilst immigration of the cholera bacilli into this fluid had also occurred.

Starling believes the explanation of the absorption of fluids depends on the high endosmotic pressure of the proteids of the blood in the capillaries, whose walls play the same rôle in the living body as the membrane in experiments with crystalline substances *in vitro*. At any time there must be a balance between the hydrostatic pressure of the blood in the capillaries and the osmotic attraction of the blood for the surrounding fluid. Just as with increased intra-capillary pressure transudation will occur until equilibrium is established between the contents of the capillaries and the fluid in the tissue spaces, so, with diminished intra-capillary pressure, there will be osmotic absorption of the salt solution from the extravascular fluid.

As a result of Starling's experiments it would appear that, provided the fluid introduced into the peritoneal cavity be sufficient, the absorption of the amount necessary to bring the blood back to normal specific gravity takes place automatically and progresses until such a result is attained.

The simplicity of this method of replacing the fluid lost in cholera, its absence from risk (of our fifty-nine cases there was only one case which showed some slight symptoms of peritonitis), its freedom from complications and the good results it has yielded make it, I think, specially suitable where, as in an epidemic, cases must be dealt with as quickly as possible and under such conditions as are usually met with in what may be termed "industrial" medical work.

THE TREATMENT OF UTERINE PROLAPSE WITH SPECIAL REFERENCE TO INGLIS PARSON'S METHOD OF INJECTION OF QUININE SULPHATE INTO THE BROAD LIGAMENTS

By JAMES DAVIDSON, M.D. (EDIN.).

Neyoor, Travancore

ALL of us who work in India must frequently come across cases of prolapse of the uterus and many of the cases seen are extremely bad forms of the condition.

Many factors must predispose to bring about prolapse. Indian women unfortunately in many instances are relegated to a position not far removed from that of the beast of burden. Frequent child birth, the constant carrying of water pots, and other heavy vessels and that, it may be very soon after delivery, untreated perineal tears which have occurred during parturition and many other conditions of Indian life must tend to produce descent of the uterus either by increase of the intra-abdominal pressure or by weakening of the pelvic floor or by both combined.

But what I wish here shortly to consider is not the causation but the treatment of the condition.

This naturally divides itself into —

- (1) Preventive treatment
- (2) { (a) Palliative treatment
(b) Radical treatment

(1) *Prevention*—Patients with lax ligaments, and a tendency to prolapse should be warned against prolonged standing or any strain. Displacement of the uterus should be corrected by pessary or otherwise, and all perineal or vaginal tears should be attended to at the time when these occur—not months afterwards.

(2)a *Palliative Treatment*—This largely resolves itself into reposition of the prolapsed uterus, and maintaining it in proper position by means of a suitable pessary—preceded by daily astringent douches and if possible ichthyol tampons where there has been ulceration or an unhealthy condition of the vagina or cervix.

Various forms of pessaries have been recommended but all have their faults more or less and unless one can be sure of being able to see one's patient frequently there is naturally some hesitation about the frequent use of pessaries.

With a constantly changing out patient practice, such as is the rule in India, patients are apt to be lost sight of, and some have been known to wear the pessary for many years.

Where it is possible, our thoughts should turn to—

(2)b *Radical Treatment*—This is really an attempt to remove or cure those pathological conditions which have given rise to the prolapse.

Surgical operations which have been designed to bring about this end may be classified as—

- (1) efforts to strengthen the pelvic floor,
- (2) efforts to reduce the intra-abdominal pressure, or the weight of the uterus,
- (3) efforts to fix the uterus in a normal position
- (4) removal of the uterus.

Under the head of (1) *viz* —efforts to strengthen the pelvic floor we have anterior colporrhaphy, or removal of the redundant mucous membrane from the anterior vaginal

wall, or perinaeorrhaphy suture of the torn levator ani or it may be posterior colporrhaphy associated with the perineal repair.

Under (2) *viz* —efforts to reduce the intra-abdominal pressure or weight of the uterus we have tapping for ascites, the removal of abdominal tumours and amputation of the cervix.

Under (4) we have mentioned the removal of the uterus.

Hysterectomy (usually vaginal) is sometimes indicated and is comparatively easy owing to the low situation of the prolapsed uterus.

The most important and most commonly adopted measures are however those classed under head (3) *viz* —efforts to fix the uterus in a normal position.

Many methods have been tried to bring this about, *viz* —

(1) Vaginal hysteropexy or anterior vaginal fixation by which the body of the uterus is brought down between the cervix and the bladder and fixed by sutures to the anterior vaginal wall.

(2) Ventral fixation or suspension (usually associated with colporrhaphy) of the uterus to the anterior abdominal wall in the middle line has been largely adopted, and is widely used. The obvious objections to the method are that subsequent pregnancies must tend to tear or stretch the artificial bands produced by the operation of fixation or suspension. In some cases the cervix has been found to prolapse even though the fundus remains fixed to the abdominal wall.

(3) The shortening of the round ligament (Alexander-Adams operation) is still a favourite operation with many of our leading gynaecologists and is a rival to ventral suspension.

In the *Medical Annual* for 1912 Victor Bonney reviewing the recent literature on the treatment of uterine prolapse and retroversion which latter usually accompanied the former condition remarks —

“In America direct fixation of the uterus to the abdominal wall both for retroversion and prolapse, seems to have been practically abandoned. In this country (Britain) on the other hand, it is still largely practised with excellent results in either condition.

“In prolapse there are certain definite advantages to be obtained by direct fixation, as it is desirable to make use of the uterus as an artificial ligament to pull up the vaginal vault and pelvic floor. In this latter effect shortening of the round ligaments fails, because it does not exercise a sufficiently direct upward pull on the uterus. In prolapse, therefore better results are obtained by ventro-fixing the uterus, conjoined with a plastic operation to readjust the relaxed condition of the vaginal walls and outlet.”

In this connection Routh writing in the *B. M. J.*, 28th January 1911 records 8 cases in which Cæsarean section was necessitated by previous ventiofixation.

Considering the number of operations of ventiofixation which must have been performed this does not seem a high percentage of cases which have shown obstruction in labour subsequent to the operation. It is in the cases where the attachment has been made unnecessarily extensive and strong that difficulty in labour is prone to follow.

I have somewhat shortly dealt with the various measures usually adopted in the treatment of uterine prolapse but I wish to draw your attention to a simple method which any of us can employ, and which seems usually very effective and devoid of risk.

Some years ago Stephen Paget suggested a new method of treatment of prolapse in old women where the pessary was not suitable, and who were patients not likely to stand prolonged operative procedure. It consisted in the injection of 1 or 2 oz. of paraffin with a melting point of 108° F into the posterior and lateral vaginal walls. In his hands the method yielded very good results.

Later on, the method of injection of quinine sulphate into the broad ligaments was introduced by Inglis Parsons. This method is scarcely mentioned or not mentioned at all in most of the gynaecological text-books, but in many cases it has proved very successful. Its object is to cause an aseptic effusion of lymph and a subsequent formation of fibrous tissue to keep the uterus in position.

I let me give in detail the technique of the simple operation—

24 grains of quinine sulphate are dissolved in one drachm of distilled water and one drachm of dilute sulphuric acid. This makes a 1 in 5 solution, which is boiled in a test-tube, and a plug of sterile cotton-wool inserted till the solution is required. One drachm of the solution is injected into each broad ligament, i.e., equivalent to 12 grains of quinine sulphate on each side.

The patient is prepared as for any gynaecological operation under an anæsthetic and the vagina carefully douched.

A special syringe has been made by the Holborn Surgical Instrument Co. but a large hypodermic syringe will do the only difficulty being that unless it holds one drachm it will have to be refilled and perhaps permit air to be taken into it.

The Operation.—An anæsthetic is given. The patient is placed in the lithotomy position. Retractors are inserted to keep back the vaginal walls and a sound passed into the uterus and held horizontally. In this position the broad

ligaments form two triangular spaces with the bases towards the operator. Crossing this space from the outer to the inner side are the uterine arteries and veins and the ureters. If the cervix is normal in size the puncture is made about $\frac{1}{2}$ of an inch from its edge. The needle is directed a little downwards and outwards. In this position the uterine arteries and veins are on the inner side, while the ureter is above and somewhat inside.

The needle point should feel quite free when it is in the cellular tissue. The solution is slowly injected and spread out from side to side. After both injections have been made the uterus is anteverted by bimanual manipulation, and a cup and stem vaginal pessary introduced, and kept in position by tapes.

After Treatment.—The pessary is removed on the fourth day. The patient is kept lying in bed for at least ten days—preferably for three weeks. A ring pessary may be worn for some months until the full strength of the new fibrous tissue is acquired.

Inglis Parsons, the originator of the operation, writing in the *Journal of Obst and Gynec of the British Empire*, February 1910, gives a summary of 178 cases so treated. Of these 75% were, he states, permanent successes, 20% improved, and 5% failures. He claims that the method does not interfere with subsequent pregnancies as ventiofixation may do. It is simple, and, rapidly performed, apparently free from risk or excessive pain, and is extremely effective.

I have looked through our operation records at Naylor Hospital for the last few years, and find that we have notes of operative procedure in 16 cases of uterine prolapse.

Of these 16, two were cases of ventiofixation. Both were seen at a later date, and both showed a return of the prolapse to some extent. Of the 14 cases treated by quinine injection only, six have been seen after the operation. One showed a relapse the other five were successful. Of these, the first was seen only a few months after operation, the second 15 months after operation.

The third—a European planter's wife—had a child about a year subsequent to operation after five years of sterility. She had no return of the prolapse after the birth of the child.

The fourth—a Eurasian woman—was seen about two years after the operation without any recurrence having occurred.

The fifth was a case of complete procidentia in a native woman. She has had twins and another child since the operation, and is still doing hard constant work as our Hospital dhobie woman. The operation was done five years ago, and there is no sign of prolapse even after these two labours. This case certainly speaks well for the Inglis Parsons method.

In conclusion I would just like to add that some of our patients have had slight fever for a few days after the injection accompanied by more or less pain or discomfort, but in no case has there been anything like abscess formation or after-trouble of any kind.

In one case, on the day following the operation the urine was coloured red by the presence of blood. This, however, disappeared from the urine before night. Probably the ureter had been accidentally punctured but no ill-effect resulted.

TREATMENT OF SMALL POX BY TINCTURE OF IODINE

By A. G. NEWELL, M.D., D.Ph.,

Health Officer, Lahore

SINCE Iodine has been proved as a useful local disinfectant, it occurred to me it should be of value as a paint to disinfect the skin in small-pox and therefore lessen the aerial dissemination of infectious epithelial debris. It necessarily follows the earlier this is done the greater should be its value. I accordingly determined to use it in the treatment of small-pox as a local paint on the more exposed parts, and so began the trial by its application to the forehead, chin, neck and the back of the hands. Its use, however, proved it to be of much greater value than the object for which I applied it. Using it early in confluent cases I found that it materially affected the development of the pox and prevented the "pitting" of small-pox which is so horrible a result in confluent cases. It is because it has proved itself so valuable an agent in the prevention and lessening of "pitting" (according to the period of its application—the earlier the better), that I think I am justified in writing this early note to enable my brother practitioners to use a valuable therapeutical agent which will modify the disease and save his patient from disfigurement. I have been too busy to accompany this note with details of cases, nor could I rely on the hospital assistant at my disposal to make out the temperature charts, but the results have proved satisfactory, and I think are worthy of record in this new treatment of small-pox. I used the ordinary B. P. tincture of iodine and so far have limited its use to the above-mentioned parts. The application can be applied 2 or 3 times a day for a few days only and then totally discarded. The coloured scabs and epithelium all come away and, in cases treated early, leave no trace of a scar even in severe confluent cases. Both Indian and European cases gave success.

The following advantages may, in my opinion, be claimed for this treatment: (1) Lessening and prevention (if applied early) of "pitting"; (2) Modification of the disease; (3) Lessening

of pain and fever; (4) Disinfection of the parts where it is applied and thereby lessening the chances of aerial infection from epithelial debris; (5) A useful method of lessening the spread of the disease among natives who refuse to go to hospital, as, if one can disinfect the exposed parts, arrangements can be made to disinfect articles of clothing covering the other parts of the body. [Before discharge from hospital my practice has been to have all patients washed or bathed in a carbolic solution.] (6) Lessening of mortality in confluent cases since it follows if the "pox" on exposed parts mentioned can be thus abated there is so much lessening of toxæmia. It seems to me there is further scope in this treatment to see how far the mortality can be reduced by alternate applications of the iodine to different parts of the body so that all parts affected by the eruption can be so treated. I intend to try this in the next cold weather when I expect some more cases for treatment. At present the epidemic has ceased, and I am now writing this note while on short leave.

AN OUTBREAK OF URTICARIA EPIDEMICA DUE TO MUCUNA PRURIENS, THE COW-ITCH PLANT

By H. STOLL, M.B.,

Captain, I.M.S.,

Mandalay

THE sudden occurrence of an outbreak of urticaria, amongst a defined group of individuals, which was apparently due to the poison of *Mucuna Pruriens*, the cow-itch plant, a member of the vegetable kingdom, one does not find unerringly in the everyday text-books of medicine. It would therefore seem to be worthy of record.

The facts are briefly these—

(a) History of Outbreak

On Saturday, 21st October 1911, a Double Company of a Punjabi Regiment went out for field training in the direction of Mandalay Hill. Their work necessitated them frequently assuming the prone and upright positions and of much manœuvring in the long grass. It was a dry day and the sepoy did not get wet through with rain or dew, but, on the other hand, their work was hard and they perspired freely.

On their return after some three hours' absence the men changed their khaki for mufti, at this time many of them noticed some itching sensations, which were soon followed by a most definite typical urticarial eruption.

(b) The Rash

The wheals varied in size from a pin's head to a halfpenny in different cases—and were diffused in some over the ventral aspect of the body only in others indiscriminately over all parts of the trunk whilst still in others the limbs

were also affected. The rash was always more obvious at the sides and in front of the abdomen where the waist belt comes and perspiration was free. It lasted throughout Sunday and Monday, by which time it had commenced to disappear—and was completely absent on Tuesday, the end of the third day.

No other symptoms at all were associated with the occurrence of this rash, no fever, pains, malaise, colic, constipation or diarrhoea were complained of or noticed.

Save in this Double Company no cases of urticaria were occurring in the regiment, nor indeed in the station itself.

(c) *The Percentage affected*

The Double Company went out 138 strong (71 G Co and 67 H Co). An inspection of these men showed that 39 (15 G and 24 H) or 28.3% subsequently suffered with this urticarial eruption.

AS TO THE CAUSE OF THE OUTBREAK

(i) Apparently there was no reason to suspect any *gastro-intestinal auto-intoxication*, none of the men complained of any alimentary trouble whatsoever.

(ii) As to their *food*—this did not differ in any way from the usual Government ration issued universally to the station, together with the extras the men themselves purchased in the Regimental Bazaar shops, which were as freely patronized by the remainder of the regiment.

None of the sepoys had eaten any fish at all, their particular meal on the Saturday morning happened to consist of *chappaties*, boiled rice with dal, vegetable curry and milk.

(iii) As to internally administered *drugs*, G Company were taking and H Company were not taking prophylactic doses of quinine. No other drug was being given to these men.

(iv) As to *insect bites and stings*, there was no evidence to support any such theory as local irritation from ants, fleas, bugs, mosquitoes, wasps or other insects—the men had seen none of these nor were any signs of them detected on examining these cases or their clothing.

(v) Two days after the outbreak the spot was visited in hopes of finding some explanation for the epidemic, and especially to inquire and search for the *procession caterpillar* (species *Cnethocampa*) noted by Professor Sir William Osler as being responsible for outbreaks of Urticaria Epidemica. No signs of these could, however, be detected and no news of them obtained, nor indeed of any such possible toxic laden member of the animal kingdom.

(vi) *A poisonous plant*—But, on the other hand around the foot of Mandalay Hill where the men had been was growing over bushes, shrubs and trees a creeper the fruit pod of

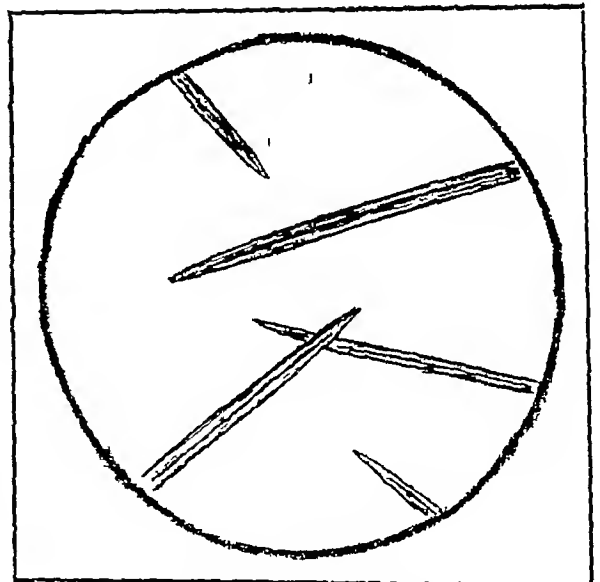
which was covered with innumerable, exceedingly slender, brittle, and easily detachable hairs, which readily stick to the skin and produce an intolerable itching.

It is not necessary to touch these pods for the urticarial wheals to become manifest—the air carries the pod hairs with the greatest ease to any unfortunate passer-by—so much so that the Burman to whom the plant is well-known will make what for him is quite a detour so as not to pass near a pod-laden creeper-covered tree.



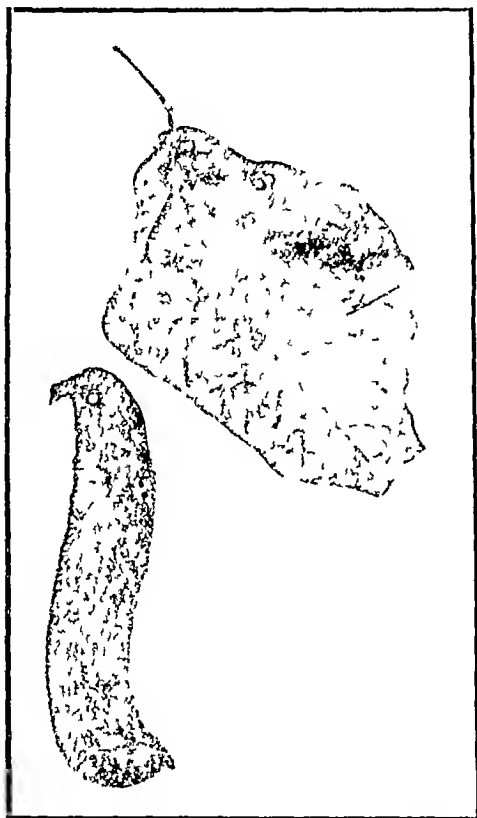
I—A GROUP OF PODS OF *MUCUNA PRURIENS*, THE COW ITCH PLANT

The hairs are not provided at their root with the bulb-like elastic reservoir—the pressure from



II—POD HAIRS (MAGNIFIED), SHewing THE UNBARBED, BULBLESS ENDS

which so botanists tell us, injects the toxin of the common stinging nettle—so that even if the hairs of *Mucuna Pruriens* run into the skin no ill or woe will result provided they are pulled out without fracture—an operation comparatively easy as the hair under the microscope is seen to be “unbarbed” unlike other such weapons of many of the members of the vegetable kingdom. This advantage is, however, minimised to some extent by their great brittleness, and the slightest rub consequent on the irritation of the initial prick is sufficient to rupture the hair and expel its toxic contents.



III—A LEAF AND A POD OF *MUCUNA PRURIENS*

I have never found the hairs of the leaf of the plant to possess any toxic properties.

One interesting point unfortunately remains unsolved, *viz.*, as to whether each wheal is produced by the local entrance of a toxic hair or whether some of the wheals at least are not the outward and visible manifestation of a mild generalized toxæmia, originating by the absorption of poisons from the local hairs.

Certain it is that a hair can and will produce a wheal at the point where it has pierced the skin and fractured moreover the Burman almost invariably states that wheals only appear where hairs have entered.

On the other hand a friend of mine, a British sportsman with much experience of camp life and this parasitic plant, states that usually the rash only appears at those spots where

contact with the pod hairs is likely to have occurred but that if one happens to be heated and perhaps in a copious sweat when the plant is met then as often as not the rash not only comes out locally but also generally over covered parts of the body.

With this latter view my personal sympathies are—it affords an easy explanation of the distribution of the rash in our miniature epidemics—and finds a ready support from sound physiological principles.

Apparently the susceptibility of different individuals to the toxic effects of the pod-hairs varies as widely as those of other intoxications.

WIDE DISTRIBUTION OF THE PLANT

The plant is known amongst the Burmese in Mandalay as the “GYWET-NYAI-THI” (the plant with the itching fruit) and is universally shunned by them.

It is apparently identical with the Urdu-named **KIWACH** the Tamil **KANCHKURI** the ‘*MUCUNA PRURIENS*’ of Botanists and the cow-itch plant of European fame. It would thus seem to be very generally widespread in nature.

SOME NOTES ON THE PLANT

As an epidemic of urticaria due to the cow-itch plant is rather a pathological curiosity and as the plant itself has apparently a somewhat definite place in Indian native medicine perhaps a few notes, botanical and others may be interesting.

The plant itself usually springs up in the rains and dies down after flowering in the following cold weather. It grows long clusters of dark purple flowers and legumes at first green then golden brown and later a rich deep red and finally a dirty yellow, as it successively ripens and dies away. These pods are covered with irritant velvety hairs which shed themselves freely. It is a climbing annual of the Pea family (*LEGUMINOSÆ*)—and is apparently found throughout the tropics.

USE IN NATIVE MEDICINE

Different parts of the cow-itch plant are used in Native and were once used in European medicine.

(1) *The hairs of the Pods*—are used as a vermifuge. The pods themselves are directed to be dipped into treacle or honey and the hairs scraped therefrom. Dose 5m to 3m. They have also been used in Indian History for poisoning wells.

(2) *The Seeds*—from the earliest of times have been accredited with powerful aphrodisiac properties by native physicians.

(3) *The Root* is said to be a useful tonic for the nervous system, and is also given by the Tamil doctors for cholera.

(iv) *The tender young pods* are cooked and taken as a vegetable, though for this purpose a special variety is cultivated (*MUCUNA UTILIS*), especially around Mandalay and in the Chin hills

OPIMUM CURES, "COMBRETUM SUNDAICUM" AND "ANTIPAV"

By W C BROOKES

Civil Surgeon, Kndal

SOME time in 1910 while in charge of the Myitkyna District bordering on China, I was provided with a supply of the vegetable Combretum Sundaicum through the courtesy of Rev George A. Wilson, 181, Queen Victoria Street, London, Secretary Anti-Opium League, with the object of giving it a trial in curing confirmed cases of the opium habit. As there were a number of Chinese in the district addicted to opium, I was able to try the drug in 30 cases, securing 90 per cent of successes,—patients declaring after the course of treatment that they had lost all desire for opium. Most of the unsuccessful cases declared they had less desire for opium after going through the course of treatment.

Instructions for preparation and use of the decoction were as follows —

Place one ounce and a half of the small leaves and twigs of the herb (*Combretum Sundaicum*) in a vessel and cover with plenty of water put a cover on the vessel, place it on a stove and allow it to simmer for 4 hours and then strain. Replace it on stove without any cover on the vessel and simmer down to a quart. This quantity should be placed in two one-pint bottles, marking them A and B respectively. The medicine should be kept in a cold dry, dark place and well corked.

In the bottle marked A should be placed the quantity of opium the patient is accustomed to take during 24 hours, and mixture to be then well shaken.

Dosage—The patient should be given 1 ounce out of bottle A several times a day (about 8 doses a day are sufficient), after each dose is drawn off, the bottle marked A should be refilled from bottle B and then well shaken. The patient should continue using the medicine from bottle A in the same way, refilling from bottle B till both supplies are exhausted.

In 1911 the Rev George A. Wilson very kindly sent me a free sample of 32 ounces of "Antipav," a medication prepared from *Combretum Sundaicum*, put up as a fluid extract in convenient form for administration (I may here mention that the actual cost of the free sample of 32 ounces of "Antipav" was 32 shillings).

The directions for using "Antipav" in curing the opium or morphia habit are given as follows —

Use the "Antipav" in doses of half a teaspoonful to one half wineglass of water every two hours.

Reduce the drug taken (opium or morphia) in regular proportion every day after giving the "Antipav" for 24 hours. The rate of diminution must be determined according to the circumstances of the case, and by easy stages until the drug is reduced to *nil*.

Treat any accompanying irritability of stomach, diarrhoea, feebleness of pulse or insomnia due to stoppage of accustomed drug, and put the patient on a general tonic after the course of "Antipav" treatment.

Diet.—Soup, milk, eggs and anything light until the stomach recovers tone, and avoid anything heavy or highly spiced.

There are fewer Chinese in this locality, and fewer people addicted to the opium habit, and I have consequently had fewer opportunities of experimenting with the new preparation "Antipav." I have, however, tried it in five cases with complete success.

A Mirror of Hospital Practice

SOME INTERESTING CASES

By C MILNE,

MAJOR, I.M.S.,

Civil Surgeon, Mussoorie, U.P.

THE following medley of cases may prove of some interest to the readers of the *Indian Medical Gazette*. The first five cases are of interest chiefly because in each of them I was fortunate enough to obtain a *post-mortem* examination—if *post-mortems* were the rule rather than the exception, the interest in an ordinary Civil Surgeon's work would be doubled.

A Case of Dysentery—Police constable Amin Khan had been suffering from "dysentery" in his own home for two or three days. Much against his will he was taken to the Police Hospital Jhansi on the evening of the 11th February, at 7 o'clock. The Sub-Assistant Surgeon who saw him did not think his case was a serious one, and merely gave him a stimulant. Next morning at 3 A.M. he died. There was no reason to suspect foul play and in fact the body was just about to be removed for burial when I arrived at the hospital. I had not previously seen a *post-mortem* done on a case of acute dysentery. I asked the Superintendent of Police for permission to make an examination—giving as my

reason that I had not heard of a case of dysentery dying within two days. Permission was given, and I made the *post-mortem* examination, about 12 hours after death. It revealed an acute gastritis, and severe inflammation of the whole intestinal tract, especially marked at the rectum, but no sign of dysentery whatever. The stomach and duodenum were bottled up and set aside, and the Police informed. They were at first inclined to treat the whole case as of no importance, but a very little enquiry showed that three persons were involved—the son of the constable, his paramour, and an ex-police constable. Arsenic was found in the viscera by the chemical analyser, and I have every hope that the three will be hanged. Had I been out of the station when the policeman died, or had this occurred in May or June, when one's keenness for *post-mortems* is at zero—a dastardly murder would have been undetected for ever. How many such murders are undetected in India every year?

Pneumonic Plague—The maid-servant of the Kotwal of Jhansi was admitted to hospital suffering from high fever—she had been ill for 8 days. The Kotwal's family had arrived from Agra 12 days before. All the family on arrival had been inoculated with plague vaccine, except the maid-servant, who had to cook food for the family. The girl had no bubo, and it was suspected she was suffering from broncho-pneumonia. Temperature was 104° , respirations 38. Examination of the chest revealed patchy dulness all over—with large areas of hyper-resonance. She died a few hours after admission, and the *post-mortem* revealed both lungs practically solid from pneumonic exudation—and a smear from the lung showed plague bacilli almost in pure culture. The physical signs in the chest were very deceptive. Two other medical officers examined the case with me, and were also of opinion that the case was broncho-pneumonia. The case is interesting also from the prophylactic point of view—a more striking example of the utility of plague vaccine it would be very difficult to get—all the other members of the Kotwal's family escaped infection.

Liver Abscess—A beggar boy, aged about 15 years, crawled into the Jhansi district hospital, and collapsed. He was never conscious after admission—temperature was subnormal—deep coma—sighing respiration—he could not swallow, and passed neither water nor feces—he died within a few hours after admission. The *post-mortem* revealed intense peritonitis, and the abdominal cavity was full of the characteristic hepatic abscess pus—on the upper surface of the liver was found a large opening where the liver abscess had burst. Amœbæ were found in the wall of the sac. There were also evidences of an ancient dysentery. Without a *post-mortem* this case would have been an absolute mystery.

Typhoid Pneumonia in a young man. A sweeper, transferred from a Central Jail in indifferent health, was admitted into the Jail Hospital, Jhansi, apparently ill, but with no definite signs or symptoms whatever. It was two or three days after his admission to hospital before I made a careful examination of him—the chest showed absolute dulness on both sides and crepitations all over. The case never rallied—temperature was subnormal throughout, and the respirations never exceeded 24 per minute. *Post-mortem* showed complete consolidation of both lungs—an interesting case showing how a profound toxæmia completely masked the usual signs of pneumonia. This type of pneumonia is very rarely seen in young adults, the man's age was 27.

Rupture of the Right Ventricle—The following notes were made by Dr J J F Dunn, assistant to the Civil Surgeon, Mussoorie, on a case on which he did the *post-mortem* examination. Rupture of the right ventricle must be a very rare occurrence. I can find no recorded case in my meagre medical library. Rupture of the left ventricle I myself have seen on two occasions. I suspect that rupture of the heart is not a very uncommon accident amongst these hill coolies, whose loads at times are almost incredible. One coolie is reported to have carried 9 maunds from Rampur to Landour and, having received his wages, went home and died. The heart has been sent to the Pathological Museum of the Agra Medical College.

"The body of a hillman was brought to the Civil Dispensary, Mussoorie, on the morning of the 5th April 1912. The information furnished by the Police was to the effect that the man had been a rickshaw coolie, and that on the previous evening, while pulling a rickshaw up a steep part of the road, he suddenly complained of faintness, sat down by the wayside, and died soon after. At the *post-mortem* it was noticed that the superficial veins of the neck were extremely prominent and full of blood. On opening the thorax, the pericardium was found to be very tense, and on being incised was seen to be full of blood, but otherwise healthy. Incision of the pericardium and evacuation of its contents was immediately followed by collapse of the veins of the neck. On the anterior surface of the right ventricle was seen a rupture of the ventricular wall. The rupture was situated one inch from the apex, and was $\frac{1}{2}$ inch long, slightly curved, and running almost at right angles to the anterior inter-ventricular groove."

The ventricular wall at the site of the rupture was entirely fatty. The thickest portion of the wall of the right ventricle measured $\frac{1}{4}$ inch in thickness.

The left side of the heart was empty and the wall of the left ventricle measured $\frac{3}{4}$ inch at its

thickest part. The weight of the heart was 8 ozs. The surface of the heart was copiously covered with fat—the valves showed no disease, a piece of the right ventricle was sent to Kasauli for microscopic examination. The report is, that there was no sign of fatty degeneration of the muscles, but there was a slight increase of the fibrous tissue, which might account for its being weakened to a sufficient extent to allow of its bursting.

Renal Tuberculosis—Mme St S. had been ailing for some years. She had been examined by several medical men—her chief complaint was frequent and painful micturition. Last year she had been operated on for urethral carbuncle, but this had given only slight relief. Occasionally she had hæmaturia—she had great pain and extreme tenderness over both kidneys. A specimen of her urine was taken—8 ounces were centrifugahsed, and a slide was made from the deposit, and stained for tubercle bacilli. Numerous acid-fast bacilli were found and these were also found to be alcohol-fast. A careful examination was now made, and slight evidences of tubercle were found in her chest—on both sides of the neck above the clavicle there were large masses of glands. She had also suffered from aphonia on several occasions, but after some weeks had generally recovered the full use of her voice. Madame P., an inmate of the same institution, had also been ailing for years—she had wasted greatly—she was extremely sensitive about any reference to herself, and would never let me examine her. She had said, however, that if I found out what was the matter with the other case, that would be the same disease as hers—a singular prophecy in the light of subsequent events. A specimen of her urine was obtained without her knowledge, centrifugahsed as above, and the deposit stained. Numerous acid-fast and alcohol-fast bacilli were also found in her urine. Later I was able to examine her. She complained of deep pain in both loins, and the kidneys were quite tender on pressure. Two cases of renal tuberculosis occurring in the same house, and at the same time, must be very rare. I sent slides to Captain Gloster at Patel Laboratory, and he very kindly examined them. He confirmed my results, and said he had kept the slides in absolute alcohol for 24 hours and still found acid-fast bacilli—a severe test completely excluding the smegma bacillus. These two persons had been the devoted attendants on another lady who had suffered for 8 years from pulmonary tuberculosis, and it is not difficult to say where the infection came from—the singular thing about the cases is that the kidneys in each instance should have been the vulnerable region.

Physaloptera in Squirrel and Cat—Captain Gloster of the Plague Research Commission

while at Jhansi did a *post-mortem* examination on a squirrel that had been found dead—plague bacilli were found in great abundance in smears from the spleen, so it was very obvious the squirrel had died from plague. Embedded in the whole anterior and posterior surfaces of the peritoneum, however, were numerous small purple cysts. On putting one of them on a slide and examining it under the low power of the microscope, it was found to be the larva of some nematode. I sent several specimens to Major Clayton Lane, who kindly identified them as the larvæ of a species of *Physaloptera*. Next day I shot a cat in my pantry and took it to the Plague Research bungalow at Jhansi, where Mr. Mukerji, Captain Gloster's assistant, kindly did a *post-mortem* on it. The cat was in a state of extreme emaciation—the stomach and the whole intestinal canal were absolutely devoid of food. The stomach, however, contained about 50 round worms. These I sent to Major Lane, and he identified them as the adult forms of the *physaloptera* sent on the previous day. This I think is a very interesting instance of the intermediate and definitive hosts of a parasite. The *physaloptera* is very occasionally a parasite of man. One thing that puzzled us about these cysts was this—How did the cysts get into the peritoneal cavity? Had the adult worm been there to lay the eggs, or had they been carried by the blood or lymph stream—perhaps Major Lane would explain.

A CASE FOR DIAGNOSIS

By O. A. R. BERKELFY HILL, M.B.,

CAPT., I.M.S.,

2nd Lancers

PATIENT—Rissaldai Major W. C., 2nd Lancers.

The general state of health of the patient since May 1911 had not been good. In March 1911 symptoms of disease appeared in the form of anæmia, debility and occasional melæna.

A reliable record of the patient's health and medical history from March to October (1911) is not obtainable as he was on furlough at the time. He stated that on several occasions his motions were "fatty" and that he had vomited up dark-coloured blood twice in May—on each occasion "about 3 lbs of blood."

He never experienced any abdominal pain whatever, nor did he ever recollect that taking food influenced the vomiting.

Subjective abdominal symptoms entirely absent.

He had experienced a slight dull pain just below the right nipple.

He was treated by several doctors and native hakims while on furlough.

At Lahore, a physician who saw him diagnosed the disease as cirrhosis of the liver

In July and August the patient was under the treatment of Major C Bowle-Evans, I.M.S., at Abbottabad.

Major Evans diagnosed ulcer of the duodenum and put the patient on a diet and gave him iron and arsenic

The percentage of hæmoglobin in the patient's blood was estimated four times —

10.7	11	70%
17.7	11	70%
24.7	11	70%
31.7	11	nearly 80%

There was well marked poikilocytosis

The patient rejoined the regiment on October 30th, and was at once placed on the sick list by me

That was the first time that I had seen him. The patient was very anæmic and complained of weakness but nothing else

A minute examination of the abdomen revealed nothing wrong with the stomach. The deepest pressure elicited no pain and the most careful palpation revealed no tumour or enlargement of the stomach. The liver was smaller than normal. The lower limit of liver dulness ended at the 7th rib in the nipple line. There was no ascites nor anasarca

The mucous membranes were very pale and waxy-looking

Hæmoglobin percentage 50. Poikilocytosis. No signs of malarial infection past or present. Fæces were most carefully examined for ova of ankylostoma duodenale but none were found

On one occasion shortly after admission the patient passed a multitude of small worms. Only one and that in a battered condition was rescued

It was not an ankylostome nor was it oxyuris vermicularis. It was a nematode of some kind

The patient was dieted carefully and given arsenic and the hydrated oxide of iron. He improved rapidly

The hæmoglobin index rose to 90 per cent, and he was well enough on December 12th to return to light work

The previous history of the patient's health prior to March 1911 is one of exceptional excellence

He had never been ill in his life. He was a total abstainer and, being by caste a Brahmin, he was unusually particular about his food

3rd February 1912—This morning at about 3 A.M. the patient suddenly awoke and vomited up about 2 pints of dark-coloured blood

He took no notice of this and went out with his rifle for target practice

After finishing his shooting he rode on horseback to hospital and produced the blood he had vomited in the early morning from his coat pocket.

I put him immediately to bed and ordered complete rest. He was given 15 of tinct opii every 3 hours

At 11-40 A.M. (about two hours after he had been put to rest) he vomited about 4 pints of dark-coloured bloody stuff mixed with food

6 P.M.—I visited the patient with Captain T. S. Smith, I.M.S., and we decided to try large doses of bismuth. Patient was forthwith put on diachym doses of bismuth carbonate four hourly and peptonised milk in small quantities

4th February 1912, 7 A.M.—The patient slept well the whole night. Peptonised milk was given twice—4 oz each time. Bowels not moved since yesterday

8 A.M.—Patient vomited up about 3 pints of dark blood-stained stuff and became unconscious. He recovered consciousness in 17 minutes. He complained of giddiness and his pulse became very feeble

The bismuth was continued. Calcium chloride gr 15 to a pint of water was given in teaspoonfuls frequently, and gr 1/10 of ergotin subcutaneously

Two ounces of peptonised milk were given every 3 hours

11 A.M.—1½ pints of vomit chiefly blood clot. Bowels were moved almost simultaneously. The motion was loose and very dark-coloured. There was not much else in the motion but blood. Patient very thirsty

4 P.M.—Vomited up dark-coloured fluid about 4 pints. The matter brought up looked like black water in which several blood clots and some curdled milk were floating. Before this attack of vomiting there was much nausea. The patient was very thirsty. A saline injection of two pints at body temperature was given into the rectum

9-10 P.M.—The patient vomited about 2 pints. The vomit resembled the one preceding. Patient quite pulseless

Another injection of normal saline solution (2 pints) into the rectum was ordered

5th February 1912, 3-45 A.M.—Patient vomited about 2 pints of dark coloured fluid containing four big pieces of blood clot. Pulse imperceptible

The patient had slept from 1 to 3-20 A.M.

Another injection of warm normal saline solution was given

9-2 A.M.—The patient suddenly became insensible, and suffered a convulsive seizure. Both eyeballs suddenly turning to one side

He recovered his senses in three minutes and slept till 10 A.M.

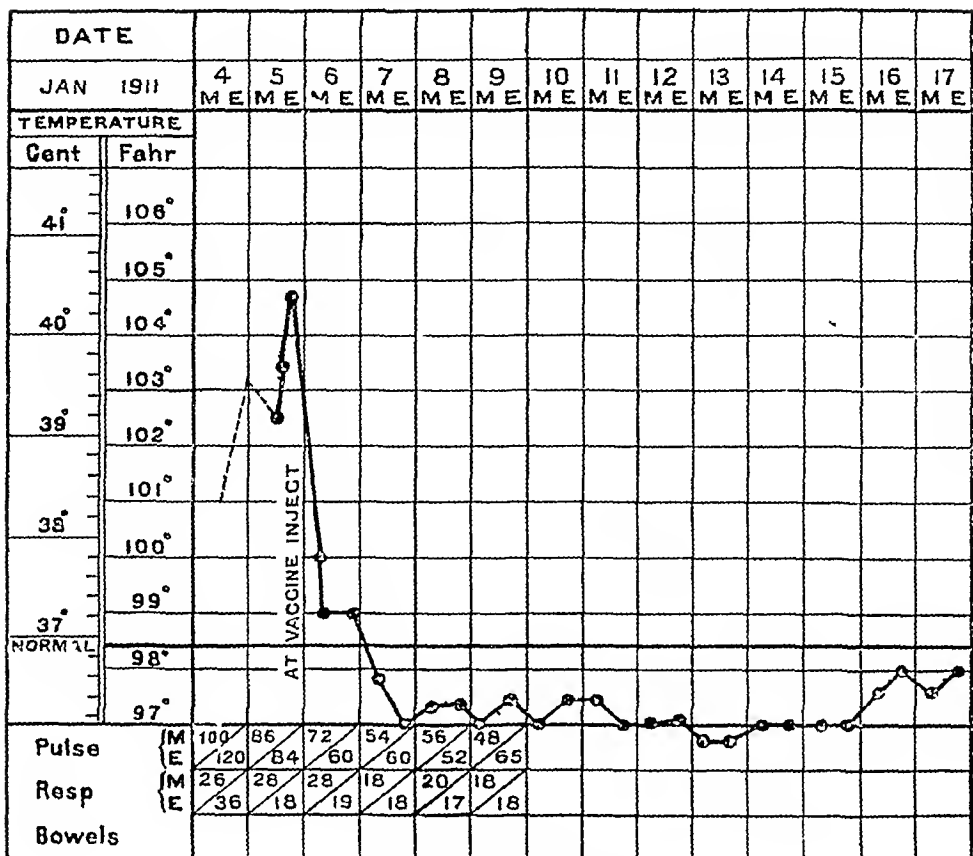
12 P.M.—Patient roused himself and said he felt much better but very giddy. Pulse feeble

5 P.M.—I visited the patient with Colonel W. D. Sutherland, I.M.S., Civil Surgeon, Saugor

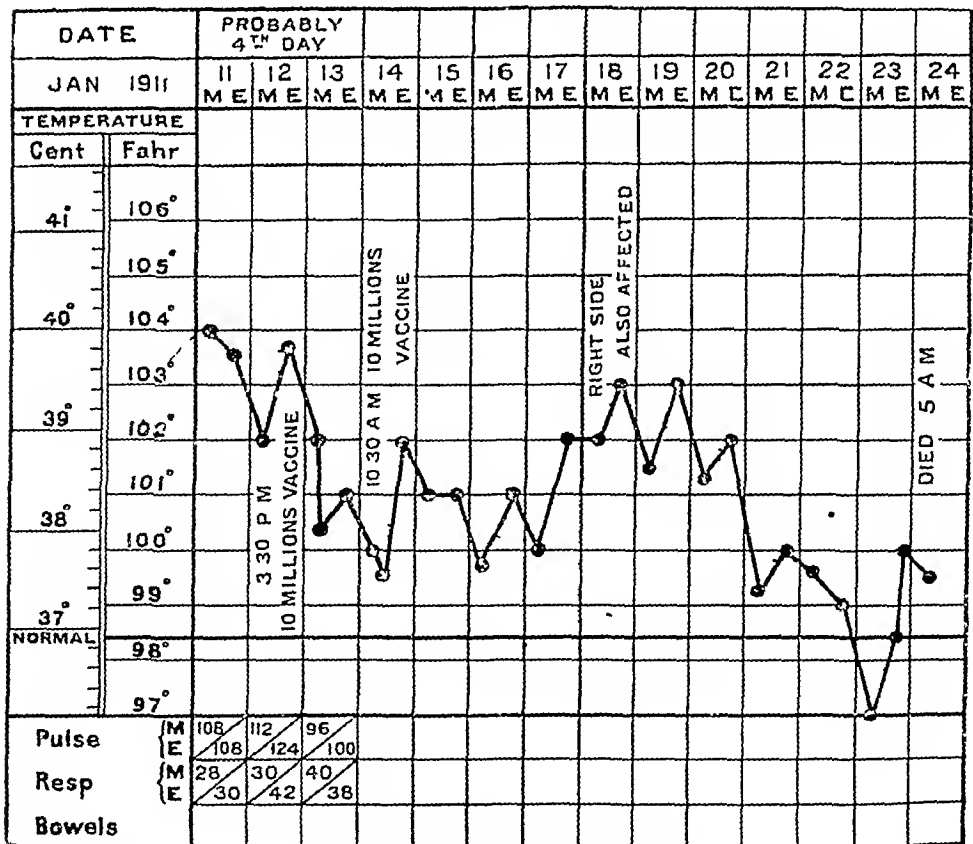
He recommended a teaspoonful of brandy with a quarter of a teaspoonful of sugar in a

THE VACCINE TREATMENT OF PNEUMONIA

By CAIT C H BARBER I M S



CASE I—SINCH—PNEUMONIA



CASE II—A KHAN—PNEUMONIA

wineglass full of warm water every hour. The saline injections were to be continued.

6th February 1912, 7 A.M.—The patient slept about 2 hours only. He was rather delirious and very restless in the night. He tried to get out of bed on several occasions. No pulse at the wrist. Pupils normal. At 10 P.M. he passed a partially formed faecal motion. At 4 A.M., he passed a fully formed faecal motion in the bed.

11-20 A.M.—The delirium increased and the patient died at 11-20.

Post-mortem was objected to.

Note on Diagnosis

The following diagnoses have been made —

Cirrhosis of liver
Duodenal ulcer
Gastric ulcer
Gastric carcinoma
Ankylostomiasis

Not one of the diagnoses quite fits this remarkable case.

In favour of cirrhosis of the liver there was the hæmatemesis and shrinkage in the liver's bulk.

Ulcer of the stomach or duodenum was judged out of court by the total absence of pain and the want of any relation between the taking of food and the vomiting.

Carcinoma could certainly not be felt. There was no wasting of the body-generally.

The profound anaemia made ankylostomiasis of long standing a possible diagnosis, but no signs of the nematode or its ova were discoverable.

THE VACCINE TREATMENT OF PNEUMONIA

By C. H. BARBER,

CAPT., I.M.S.

IN view of the recent correspondence in the *Lancet* on this subject between Dr. Nathan Raw and Sir Douglas Powell, I think the following cases that came under my care over a year ago, and of which I have preserved notes, will be found interesting.

Case I—B. Singh, aged 20, whom I had examined the day before he reported sick and passed fit as a recruit, came to hospital late at night on January 4th, 1911, suffering from fever and pain in the chest. I saw him next morning and found him to be suffering from lobar pneumonia of the left side with most typical physical signs. His temperature was then 103.5° with the usual sthenic febrile symptoms.

I injected the same morning a dose of 10 millions Burroughs and Wellcome's stock pneumococcal vaccine with the extraordinary result that

the temperature, after rising to 104.6° that evening, was down to 100° the next morning, January 6th, and the man's toxic symptoms and his febrile distress had disappeared. He felt quite comfortable, his pulse was down to 86 and his breathing regular and much slower. By midday he was 99° and the next day below normal, at which he remained from then onwards (see chart). The physical signs of pneumonia, however, remained and were most typical, with the usual dulness, tubular breathing and râles. On January 9th, dulness, crepitations and a pleuritic rub are mentioned in the notes, on the 10th the rub had disappeared, on the 11th dulness and râles still present, on the 12th less, on the 14th I recorded 'no dulness, few reduced crepitations'. From the day after the injection he never looked back and, save for slight pain in the left chest, was never distressed.

He had moreover only the one dose of 10 millions.

Case II—A. S. Khan, aged 28, brought to hospital on January 11th, 1911, complaining of cough and pain in the left chest. So far as could be ascertained, he had already been ill for at least two days and probably more (was a visitor from another regiment). Temperature 104°, with typical signs of lobar pneumonia over the whole of the left side. In the afternoon of January 12th, 10 millions B. & W.'s stock vaccine was injected and the lung was punctured for a cc or two of blood in the hope of making an autogenous vaccine (a hope not realized). This was followed by an improvement in the general condition and a reduction in the temperature to below 101°. A second dose was injected on the 14th and the temperature remained low until the 17th, but with no other improvement. On the 18th the temperature was high again and the right chest was found affected. I had unfortunately no more vaccine with which to continue that line of treatment and the man died six days later on the 24th.

Before reading the correspondence above quoted, one had been under the impression that the advisability of giving vaccine as early as possible in the disease had been fairly well established (Butler-Harris, *B. M. J.*, 1909), but it would seem that that view is not by any means generally accepted.

The possibility, also, of aborting an attack by bungling about an artificial crisis, Powell appears to accept only with great reserve, and Raw did not meet with it in his first two hundred cases, although the production of such crisis has been shown to occur both experimentally and clinically by Macdonald, Butler-Harris and others.

My first case very much resembles Nathan Raw's two recent 'abortion' cases, and although I used only the one dose of 10 millions as compared

with his 50 millions every four hours, the result was the same and was very striking and instructive. I have already described the absence of toxic symptoms after the crisis together with the persistence of physical signs in my case, and Raw states regarding his "the physical signs of consolidation were not much influenced by the treatment, but there was a complete absence of toxæmia."

Case II was treated within a few days of the first, but was not got early, the first injection being given on what was probably the 4th day of the disease, whereas the first case was injected *within twenty-four hours of the onset*.

From my limited experience of only a few cases I am not in a position to discuss dosage, but one looks forward to the publication of Raw's next series of cases and feels sure he is on the right track in endeavouring to abort this most difficult disease. Charts are attached.

RUPTURE OF THE SPLEEN OPERA TION RECOVERY

By A FENTON,

MAJOR, I.M.S.,

General Hospital, Rangoon

MAUNG SAN SHWE, a Burmese prisoner, aged about 50, was seen in consultation with Captain Knapp, I.M.S., Superintendent, Rangoon Central Prison, on the afternoon of 12th February 1912.

He gave the history of an injury on the left side from a fall on the evening of 9th February 1912. He was in indifferent health and in a special gang.

There was considerable distension of the abdomen, acute pain and tenderness in the left epigastrium, rigidity of the right rectus, and nausea.

The diagnosis pointed to some intra-abdominal injury, and indicated laparotomy without delay. I had him sent down to the General Hospital, and operated at 6-30 P.M. The abdomen was opened by a left rectus incision. It was found full of blood, which was cleared out. The hæmorrhage was traced with some difficulty to a rupture of the spleen near the hilum on the gastric surface.

The spleen was enucleated without special difficulty. It was about twice the normal size.

The drainage tube was inserted in the lower angle of the wound in view of possible oozing.

The man made a good recovery and was sent back to the Jail Hospital on 26th February 1912.

The rupture in the spleen was a comparatively small one, about $1\frac{1}{2}$ inches long, and $\frac{3}{4}$ inch deep. This no doubt accounted for the slow hæmorrhage and not very great acuteness of the symptoms.

The following blood counts were made before he left the General Hospital—

(1) Red cells	3,670,000
White cells	30,000
Polymorphonuclears	85%
Small mononuclears ..	5.25%
Large do	10.25%
Mast cells	5%
Hæmoglobin	80%

(2) About a week later—

Red cells ..	2,472,000
White cells	15,800
Hæmoglobin	75%
(No differential count made)	

On 28th March 1912 the blood count was as follows—

Red cells ..	4,140,000.
White cells	9,000
Hæmoglobin	70%
Polymorphonuclears	70.5%
Small mononuclears	23.25%
Large do	3.25%
Eosinophiles	2.25%
Intermediate	75%

On 11th May 1912 the count was—

Red cells	3,424,000
White cells	13,600
Polymorphonuclears ..	61.75%
Small mononuclears ..	26%
Large do	3.5%
Eosinophiles	5.5%
Mast cells	1%
Myelocytes	5%
Other forms	75%

On 17th July 1912 the count was—

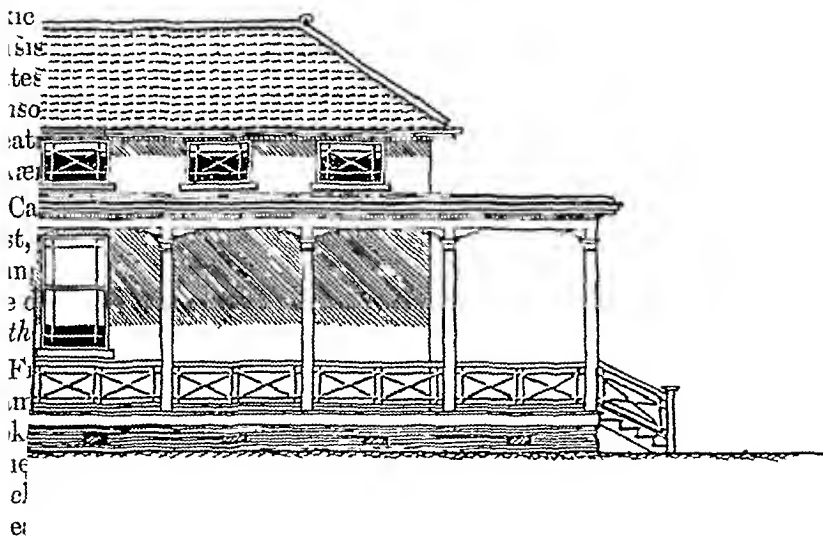
Red cells	4,085,000.
White cells	11,400.
Hæmoglobin about	95%
Polymorphonuclear	47.7%
Small mononuclears	25%
Large do	6.7%
Eosinophiles	15.7%
Mast cells	2.3%
Intermediate forms	2.3
Others	3

The above counts were kindly made by Sub-Assistant Surgeon Guudatta Saïm of the Pathological Department in the General Hospital, Rangoon.

The patient has had two attacks of benign tertian malaria since his return to jail.

He is at present in good health, appears fitter than before the operation. The absence of his spleen has not apparently troubled him very much so far.

The high eosinophile count on 17th July may possibly indicate some form of intestinal parasitism.

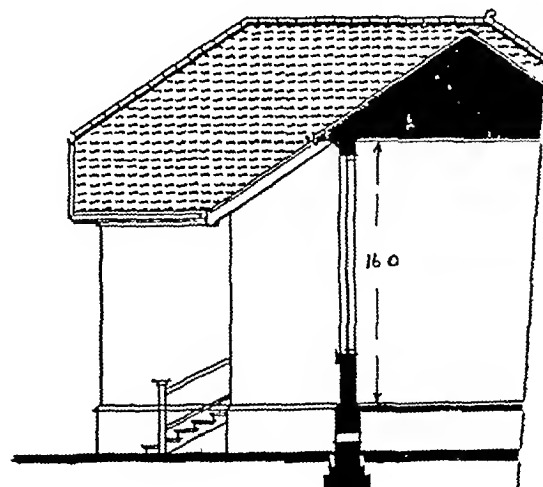
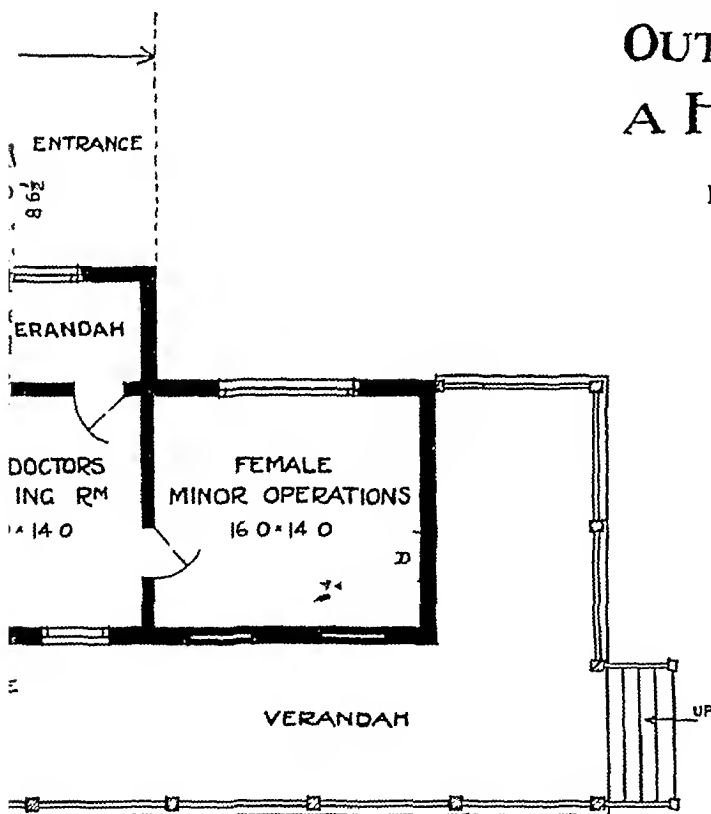


It is proposed to build a new hospital of the Buxar sub-division of the Shahab to be adopted for the out-patient department shown in the accompanying sketch plan Messrs Briggs, Wolstenholme and Thorpe of Liverpool, from a description of the requirements are similar in most head-hospitals in Bengal, and as the only type does not in my opinion satisfactorily in plan may be of help to other Civil Surgeons under consideration

There are a few features which require no need for the doors between the Assistant Surgeons consulting room width and 10 ft or more height with substituted at Buxar inasmuch as it will to supervise to some extent what is in room Verandahs on the north side must also being provided at Buxar

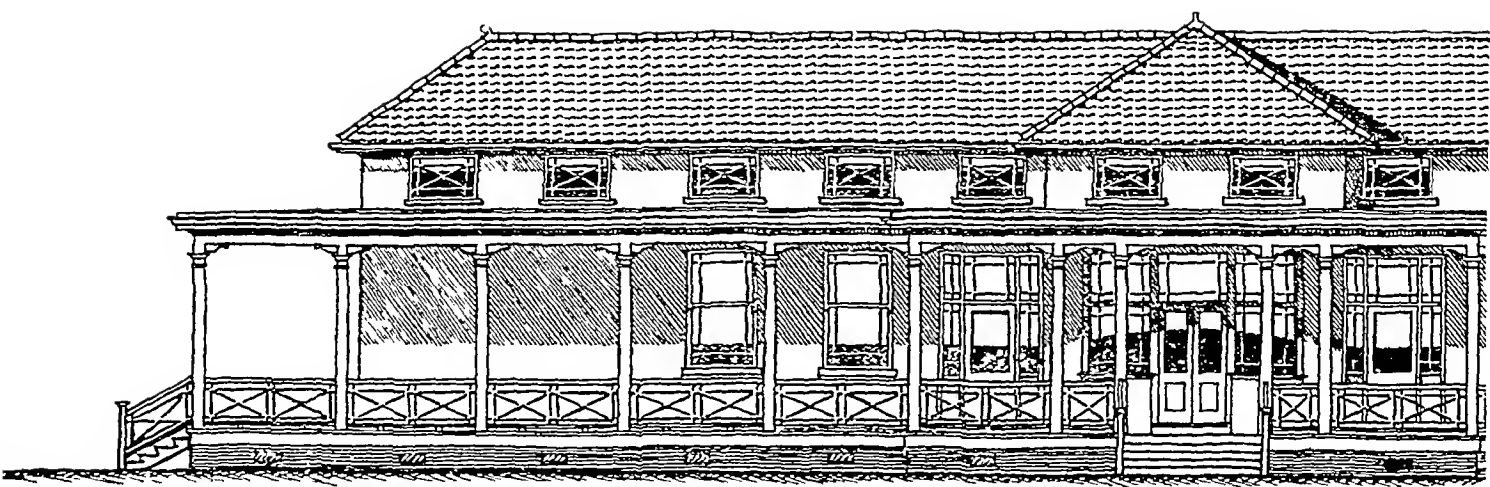
DESIGN FOR THE OUT-PATIENTS DEPARTMENT OF A HOSPITAL IN INDIA

BY MAJOR M H THORNELEY, I.M.S.,
Civil Surgeon, Arrah

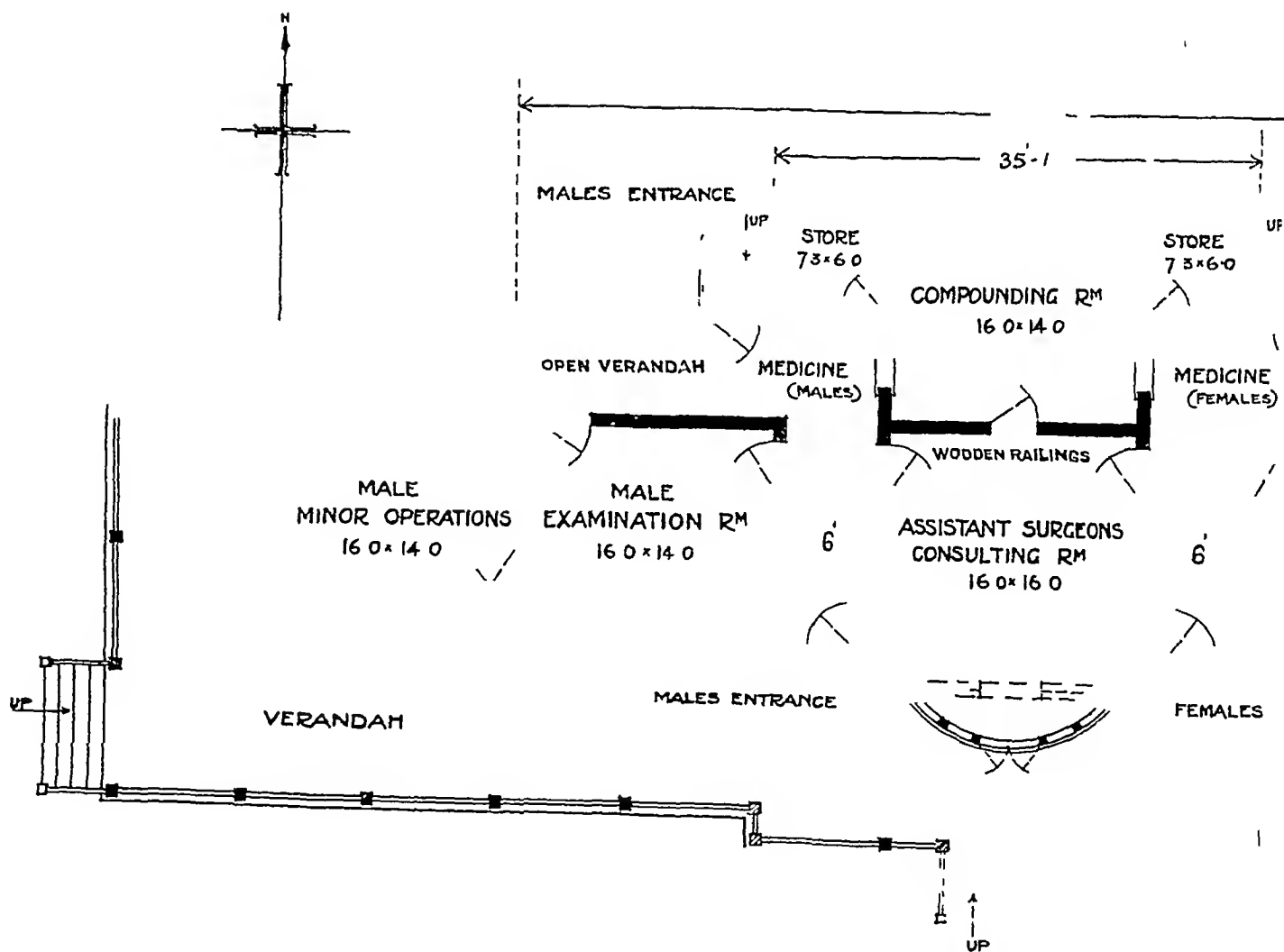


SECTION LOOKING

50
 FEET



SOUTH ELEVATION



PLAN

SCALE 10' 5' 0'

10'

20'

30'

Indian Medical Gazette

SEPTEMBER

THE ETIOLOGY OF DEFICIENCY DISEASES

It is seldom that one comes across an article so interesting and so illuminating as that by Casimir Funk in June number of *The Journal of State Medicine* on the above subject. Under this heading he includes beri-beri, polyneuritis in birds, epidemic dropsy, scurvy, experimental scurvy in animals, infantile scurvy, ship beri-beri and pellagra.

These diseases were considered for years as due either to intoxications by food or as infectious diseases, and twenty years of experimental work were necessary to show that diseases occur which are caused by a deficiency of some essential element in the food. Deficiency diseases break out in countries where a certain unvarying diet is partaken of for long periods when this diet happens to be deficient in a substance which is essential for the metabolic processes of the body, all the conditions necessary for a serious epidemic are fulfilled.

All the above diseases present certain general characteristics in common. The most prominent of these are a general cachexia accompanied by an enormous loss in weight, marked nervous symptoms are often present, which are due probably to degeneration of the peripheral nervous system.

It is now known that all these diseases, with the exception of pellagra, can be prevented and cured by the addition of certain preventive substances to the diet. These preventive substances, which are of the nature of organic bases, Casimir Funk terms "vitamines." Two different groups of these substances would appear to present themselves: the beri-beri group and the scurvy group.

To the beri-beri group, which is characterised by more or less distinct neuritic symptoms, belong beri-beri, polyneuritis in birds, and epidemic dropsy. This group of diseased conditions has been definitely proved to occur when decorticated rice is used as the staple food. We need not enter into the history of the different stages whereby white rice became incriminated. certain important steps are known to everyone. Thus, Takaki in 1884 by a change of diet (substitution of wheat and meat for part of the

rice) reduced the incidence of beri-beri in the Japanese navy from over thirty thousand to practically nil. Braddon confirmed Vordermann's observation that the disease was distinctly related to the continuous consumption of white or decorticated rice, and finally Fraser and Stanton corroborated the results of previous workers, especially as to the harmlessness of parboiled, or in India, country rice.

The later steps in the investigation have been rendered possible by the discovery that birds (fowls, pigeons, ducks) when fed on polished rice develop a disease which is, so far as it is possible to say at present, absolutely identical with human beri-beri. Eijkman showed that the disease was only produced by rice deprived of its pericarp, or that part of the pericarp called the silver skin by the Dutch authors. He also discovered that an aqueous extract of rice-polishing cures the disease, and that the protective substance dialyses and is not precipitated by alcohol. Gijns was the first to adopt the deficiency theory as an explanation of the etiology of the conditions met with. He states clearly that the disease breaks out when a substance necessary for the metabolism of the peripheral nervous system is lacking in the food. He discovered similar protective substances in mung dal (*Phaseolus radiatus*) and meat, and showed that these food-stuffs lose their protective power when heated to 120° C.

Fraser and Stanton attempted to discover the protective substance in rice-polishings and came to the valuable conclusion that the phosphorus content of rice formed a good practical criterion of the likelihood of any particular sample causing the disease. On this basis Schaumann constructed the phosphorus-deficiency theory which he extended to other deficiency diseases, such as scurvy and ship beri-beri, and which suggests that these diseases are due to a deficiency in certain organic phosphorus compounds in the food.

During the last two years a quick succession of papers appeared which deal with the isolation of the protective substance from the different food-stuffs. Ternuchi showed, by precipitating the phosphorus from the acid extract of rice-polishings that the active substance was not any compound of phosphorus. It has also been proved that the active extract of rice-polishings is destroyed at 130° in 0.5 per cent. hydrochloric acid, or in 1 per cent. sodium carbonate solution, but not at 100° C.

A summary of our knowledge up to 1911 of the chemical nature of the protective substance from rice-polishings shows the following well established facts —

1. The substance is soluble in water, in alcohol, and in acidulated alcohol
2. The substance is dialysable
3. It is destroyed by heating to 130° C
4. It is neither a salt nor a protein

This was the position about the middle of 1911 when Casimir Funk began his remarkable series of investigations which have resulted in the complete isolation of the protective substance as a simple chemical body of a basic nature which, on analysis, corresponds to the formula $C_{17}H_{20}N_2O$. This substance he designates the beri-beri vitamin. The yield is very small 1 kilo of rice-polishing yielding only $\frac{1}{2}$ gm of the crystalline vitamin.

The dose necessary to cure pigeons is very small 40 mgrms was not only sufficient to cure a pigeon in a very short time—often in a few hours—but also maintained the cured animal in health for periods varying from seven to twelve days, when polished rice was used as food. Nothing is more remarkable than the speed with which the substance acts. Pigeons, fed on Rangoon rice in the Physiological Department, Medical College, Calcutta, and in the last stages of polyneuritis, lying on their backs and just able to breathe, have been restored seemingly to complete health in a few hours by the administration of an extract of rice-polishings.

Not content with isolating the vitamin and determining its chemical composition, Funk has attempted to explain its action. The surprisingly rapid disappearance of the nervous symptoms suggested to his mind that the substance is needful for the metabolism of nervous tissue, and that it probably had some connection with cell lipoids.

Investigations showed that the brain of polyneuritic pigeons was sensibly poorer in nitrogen and phosphorus than that of normal pigeons—a fact that suggests the degeneration of the brain lipoids.

Analyses of pigeons' brain demonstrated the fact that the nitrogen content is very low, so that its relationship to the nitrogen content of the curative dose of the vitamin is so small that the vitamin might be considered a specific food for this special kind of tissue.

Funk's view of the etiology of beri-beri is that the specific vitamin is necessary for the metabolism of nerve tissue, as in the disease the signs and symptoms point manifestly to involvement of the nervous system further evidence is afforded by the fatty degeneration of the nerve cells and the deficiency of the brain in nitrogen and phosphorus.

The lack of vitamin in the food forces the animal to get this substance for the metabolism of the nervous system from its own tissues. The effect of this is an enormous loss in weight owing to the disintegration of a large mass of tissue in order to provide a sufficient supply. As soon as the available stock begins to be scarce, there is a consequent breaking down of nervous tissue with a result that the nervous symptoms present in beri-beri manifest themselves. Included in this group Funk places epidemic dropsy, termed by the French the wet form of beri-beri and which appears to be due to the same cause.

While these investigations mark a considerable advance on our knowledge of the causation of beri-beri and the way in which a diet deficient in these vitamins acts, a certain amount of caution has to be exercised in accepting the conclusions arrived at. We do not altogether agree with the view that these diseases are entirely deficiency diseases as we consider it has not been proved that any one of them occurs in starvation pure and simple. Of course it may be that death occurs in starvation before the neuritic conditions have had time to develop, but we do not consider the evidence absolutely convincing that besides a deficiency of something in the diet—the newly-discovered vitamins—there is not another factor, probably toxic in nature, present, without which the absence of the vitamin is powerless to produce the disease. The very fact that the separated vitamin of beri-beri acts so rapidly in curing the condition would appear to us to mean that its action is more allied to that of a quick antagonistic neutralization than to the slow anabolic processes concerned in the regeneration of nerve tissue. Whatever the true explanation may be the practical point remains that extracts of certain foods can cure and cure quickly the polyneuritis of fowls, and evidence is not wanting that such extracts will be of great value in the treatment of human beri-beri and epidemic dropsy.

The food materials so far investigated that give the greatest return of this vitamin substance are, in addition to rice-polishings and the

different dals, ox-brain, milk, meat and especially yeast

The vitamine can be extracted from all these substances by means of alcohol, and usually from the alcoholic residue with water. Thomson and Simpson of the Liverpool School of Tropical Medicine have recorded remarkable results in the treatment of three severe cases of beri-beri with a full mixed diet, to which one ounce of brewer's yeast and six ounces of Katjangido beans (*Phaseolus radiatus*) were added. The oedema and pain in the legs disappeared in a week, the patients recovered completely, and were discharged cured in sixteen days. The yeast was given in diachm doses rolled up in rice papers.

NEO SALVARSAN

SINCE the introduction of "606" by Ehrlich for the treatment of syphilis over two years ago a considerable amount of knowledge has been gained on its effects and on the proper methods of its administration. It is generally admitted that it is the most powerful remedy, so far available to the profession, for the destruction of spirochaetes. During the period that has elapsed since the drug has been available, it has had to contend with, and fight against, a great deal of prejudice, and, it must be admitted, despite the occurrence of fatal accidents and its use in cases where undoubted contra-indications existed, that the general consensus of opinion of those best qualified to judge assigns to salvarsan the first place in the treatment of syphilis. Thousands of cases have been cured, often by a single injection of this 606th organic compound experimented with, but Ehrlich himself has all along recognised its limitations and the difficulties that have beset treatment with this drug. The exact neutralisation of the solution for injection has always been one of the chief stumbling-blocks in the extensive employment of this remedy, and the fact that in order to obtain the best results the intravenous route is necessary has proved to be a serious obstacle in its general employment.

Recognising these drawbacks Ehrlich has been occupied during the last two years with researches having for their object improvements in the drug whereby its action might be rendered more efficient. At the 914th attempt he has succeeded in producing a substance—neo-salvarsan—which is said to be free from many of the objectionable features of the original. Neo-

salvarsan is a condensation product formed by the action of formaldehyde sulphonylate of sodium on salvarsan. It is a yellowish powder, which is very soluble in water and forms a neutral solution.

Experiments on animals show that 1.5 gm. neo-salvarsan is equivalent to 1 gm. of salvarsan, and that the therapeutic action of neo-salvarsan on the spirillum and on nagana infections was more marked than that of salvarsan. Since last October Schreiber has treated 230 patients, giving 1,200 injections, mostly intravenous.

It is dissolved immediately before use in warm, germ-free, distilled water. Very slight agitation is required; violent shaking must be avoided, since poisonous oxidation products are formed thereby. Sodium chloride causes decomposition, hence physiological saline cannot be used as a solvent.

He dissolves 0.6-1.5 gm. in 200-250 cc. of water, and begins with doses of 0.9 gm. for a man, 0.75 gm. for a woman and 0.15 for a child. On the first day he gives a man 0.9 gm., on the third 1.2 gm., on the fifth 1.35 gm., and on the seventh 1.5 gm.

Neo-salvarsan is quicker in its action, in corresponding doses, than salvarsan. The treponema disappear within 24 hours, often earlier. The intravenous injections cause very slight constitutional disturbances.

The Wassermann reaction became negative in sixty-one out of ninety-seven cases. He had no nerve nor cerebral complications amongst his cases. Intramuscular injections of neo-salvarsan are accompanied by fewer local changes than are those of salvarsan. There is no induration and no necrosis. Further data with regard to the permanent results of this remedy will be awaited with great interest.

Current Topics.

PUNJAB BRANCH OF THE BRITISH MEDICAL ASSOCIATION

A PUNJAB Branch of the British Medical Association was started in 1911 at Lahore. Colonel Bamber, I.M.S., being elected President for the year. Lieutenant-Colonel Braide and Major Hugo, I.M.S., Vice-Presidents, and Lieutenant-Colonel Browning-Smith, I.M.S., Secretary and Treasurer. Some very successful meetings were held last year at Lahore, and many interesting papers read and subjects discussed. There was a meeting held there on 25th

June 1912, with an attendance of between thirty and forty, among others Surgeon-General Sloggett, VHS, CB, AMS, and Colonel Firth, RAMC. Colonel Bamber, IMS, took the Chair.

Lieutenant-Colonel C H James, CIE, IMS, and Captain Lister, IMS, showed some interesting cases, and Lieutenant-Colonel Roberts, CIE, IMS, read a paper on Ileo-Colostomy and demonstrated a method of gastric and intestinal suturing.

Colonel Firth read a very interesting note on enteric fever inoculation and the prevalence of enteric and paratyphoid fever in India, which paper is published in the present issue of this Gazette.

Captain Lister read a note on "The After-Treatment of Cataract Extraction in the Capsule by Smith's Method," and an interesting discussion followed. Colonel Hendley, IMS, showed some excellent skiagrams of chronic rheumatoid arthritis.

EPIDEMIC CEREBRO SPINAL MENINGITIS

Frost of the Public Health and Marine Hospital Service, U S A, has published a most interesting review of the etiology, transmission and specific therapy of cerebro spinal meningitis.

From a careful survey of the literature he writes with regard to the sources and routes of infection as follows.—

"The impossibility of tracing epidemics to definite sources by the most careful epidemiologic studies has invested this disease with a veil of mystery, which has only recently been drawn by investigators who have conducted the most thorough intensive studies, combining bacteriologic and epidemiologic methods. With the data supplied by them we are now in a position to draw at least reasonable inferences, if not definite conclusions, as to the mode of transmission of this disease.

1 Cerebro spinal meningitis is due to the meningococcus, as evidenced by the almost constant association of this organism with cases of the disease. Failures to demonstrate the meningococcus in well authenticated cases are not more common than would be expected in view of the technical difficulties.

2 The natural habitat of the meningococcus is the human body. There is no record of its ever having been isolated from any other natural source. All the facts known of its biology indicate that in nature the conditions necessary for its multiplication are encountered only in the human body, and that its life outside this habitat is very short.

3 Man, being the only known natural host of the meningococcus, is therefore the only known source of infection. The sources of infection may be divided into two classes: (a) Persons suffering with clinically recognizable manifestations of cerebro spinal meningitis, and (b) persons not suffering from any illness clinically recognizable as this disease. In the former, that is in persons suffering from meningitis, the meningococcus has been shown to be present in the naso-pharyngeal secretions (very commonly during the early stages of the disease, progressively less frequently, later), in the blood at times, and in the cerebro spinal exudate.

In the latter class, that is in the so-called 'meningococcus carriers,' the organisms are found only in the naso-pharynx, where they persist for a variable period.

From patients suffering with meningitis and from "meningococcus carriers" the organisms are eliminated in the naso-pharyngeal secretions.

The sick and the well carriers of meningococcus are found closely associated. So far as the recorded studies show—and they include thousands of persons—they indicate that the number of cases of meningitis and that of carriers in a community bear a fairly definite ratio to each other.

Since apparently healthy carriers are in all probability much more numerous than recognized cases of meningitis, and have at the same time much more freedom of movement and consequent opportunity to mingle with other people they would seem to be of much more importance in the distribution of the meningococcus.

4 The primary seat of attack, the first site of multiplication of the meningococcus in the human body, is believed to be the naso-pharynx. This is inferred because of (a) the common occurrence of the meningococci in this location in the early stages of the disease, sometimes even prior to the development of meningitic symptoms, and (b) because in many cases (carriers) the demonstrable occurrence of the organism in the body is limited to this site.

5 The meningococcus would appear to be transmitted from its sources (infected persons) to other persons by such contact as ordinarily takes place between people associated together—the transfer of secretions by kissing, by the use of common eating or drinking utensils, the use of the same handkerchiefs and towels, the soiling of hands in hand shaking, the contamination of food by fingers soiled with secretions, etc. The apparently short virility of the meningococcus outside the human body leads to the inference that the contact is usually direct—that not much time elapses between the elimination and the reception of the infective material."

SERUM THERAPY.

The use of antimeningococcic serum in the treatment of this disease may now be considered to have passed beyond the experimental stage and to have been established as a therapeutic measure of such well-proved efficacy that its use becomes imperative.

Antimeningococcic serum is obtained from horses immunized against the meningococcus by repeated, long-continued injections of live cultures, of killed cultures or the disintegration products (antolysates) of cultures. In its therapeutic action this serum differs essentially from antidiphtheritic and antitetanic serums. The latter are antitoxic, their chief action is the neutralization within the body of soluble toxins (poisons) formed by the bacilli of diphtheria and tetanus. The action of antimeningococcic serum, on the other hand, is directed chiefly toward the destruction of the organisms themselves. (1) This serum is bacteriolytic, in the body, and under suitable conditions *in vitro*, it kills and dissolves the meningococci. (2) It is opsonic, that is, it in some way facilitates the destruction of the meningococci by the phagocytic cells of the body. (3) It is to some extent antitoxic. While the meningococcus does not produce a soluble toxin similar to that produced by the diphtheria and tetanus bacilli, it contains so-called endotoxins, poisons within the bodies of the meningococci, set free when the latter

are destroyed by bacteriolytic or phagocytic action. It is these endotoxins, liberated by the destruction of meningococci within the body, and exerting a toxic influence upon the system, which are neutralized by the antitoxin present in antimeningococcic serum.

The action of this serum then is, first, to destroy the meningococci by bacteriolysis and phagocytosis, and, second, to neutralize the poisons resulting from their disintegration. These processes are similar to those by which the human body itself combats the meningococcus infection.

Since the serum exerts its action chiefly upon the meningococci themselves, it is essential that it should be brought into actual contact with them. This can be accomplished efficiently only by introducing it directly into the subarachnoid space by injection into the spinal canal, or occasionally into the ventricles of the brain.

The first step in the administration of the serum is "lumbar puncture." A quantity of fluid at least equal to the amount of serum to be injected (30 to 60 cc) should be withdrawn. A larger amount may be allowed to flow out if the pressure of the cerebro-spinal fluid is high.

The serum should be injected very slowly, while the condition of the patient is carefully watched by an assistant. The amount to be injected depends upon several considerations. A child should receive ordinarily about 15 cc to 30 cc, an adult from 30 cc to 60 cc at the first injection. These amounts may ordinarily be introduced with little fear or difficulty if the amount of fluid withdrawn is equal to or greater than this. Quite often, however, the amount of fluid obtainable is less than the amount of serum which it is desirable to administer. In such cases one must carefully note the resistance offered to the injection, must avoid undue pressure, and must watch closely for untoward symptoms, but in their absence need not be deterred from administering the full dose.

Course of treatment—Antimeningococcic serum has not as yet been standardized with an accuracy comparable to that used in the standardization of antidiphtheritic serum. Greater variations are therefore to be expected in the potency of different samples. Also its action differs essentially from that of the purely antitoxic sera, hence in its administration one must be guided by somewhat different considerations, must be guided to a greater extent by results rather than by dosage.

Experience has shown that the best results can be obtained only by repeated injections. Although surprising results are often obtained from a single injection, unless the destruction of the meningococci is complete relapse is likely to recur. It is therefore recommended by Netter and Debie as a routine procedure to give at least three or four injections of full doses of serum at intervals of 24 hours, and after that to be guided by the clinical signs and changes in

the cerebro-spinal fluid. Ordinarily after three or four daily injections the fever will have fallen, the rigidity be relaxed, and the mental condition of the patient markedly improved. Since, however, these signs do not necessarily indicate complete recovery, it is highly important to make observations at each injection upon the cerebro-spinal fluid and to be guided largely by its appearance. Under the influence of the serum the cerebro-spinal fluid becomes clearer, the large adventitial cells diminish, the leucocytes are relatively increased and less degenerated lymphocytes to some extent replace the polymorphonuclear leucocytes, the number of meningococci present in the fluid is diminished, and those that remain are found to be degenerated. Under favourably progressing treatment the meningococci disappear completely after from one to four injections. Levy gives the following figures as to the disappearance of meningococci in the cerebro-spinal fluid. Meningococci could no longer be demonstrated—

In 18 cases after a single injection, in 33 cases after 2 injections, in 35 cases after 3 injections, in 14 cases after 4 injections, in 9 cases after 5 injections, in 4 cases after 6 injections, in 1 case after 11 injections.

While these results illustrate the remarkable action of the serum in destroying the meningococci, they also show the necessity of repeating the injections as recommended and of being guided by the examination of the cerebro-spinal fluid in continuing injections after the third or fourth.

Results of Serum Therapy

The following table, taken from Levy's treatise, presents succinctly some of the results accomplished by the use of antimeningococcic serum in reducing the mortality from cerebro-spinal meningitis.

Since the disease is one in which the case mortality varies greatly in different epidemics, the results of serum treatment as shown in this table can best be appreciated by comparing in each instance the mortality of untreated cases in the same vicinity.

Reported by—	Cases treated with serum		Cases treated without serum (per centage mortality)
	Number	Percentage mortality	
Kleiner (collective)	712	31.4	70.800
Netter	100	28	49.0
Dopter	402	16.44	65.0
Schoene	30	25	53.0
Jehle, Weiss, Edel	64	42	70.850
Leick	34	32.4	66.0
Neglein	30	26.6	50.0
Kleinschmidt	21	19	162.47
Quenstedt	18	22.2	256.2
Levy	165	18.18	52.14

¹ General mortality in Prussia, 1907

² General mortality in Prussia, 1908

³ General mortality in Prussia, 1909

The above table gives the gross mortality, including among the serum-treated cases a number of fatalities in patients moribund when treatment was commenced, a considerable number in whom the treatment was not sufficiently vigorously carried out, still others who died from complications such as pneumonia, tuberculosis, valvular heart disease, etc. Even including these cases the mortality as compared to cases in the same vicinity not treated with serum has commonly been reduced to one-half, not infrequently to one-third or one-fourth. It is abundantly proven that in cases treated early and vigorously the mortality may be expected to be reduced to even lower rates than those given above.

The importance of instituting serum treatment as early as possible in the course of the disease is illustrated by an analysis of the 712 cases reported by Flexner,¹ 99 cases reported by Netter and Debre from their own experience, and 402 cited by them as reported by Dopter

Day of disease when treatment was begun	Mortality, per cent		
	Flexner's cases (712)	Dopter's cases (402)	Netter and Debre's cases (99)
First to third day	25.9	8.20	20.9
Fourth to seventh day	27.5	14.40	33.3
Later than seventh day	42.1	24.10	26.0
Average mortality	34.1	16.14	28.0

Summarizing the observations upon the use of antimeningococcic serum in the treatment of cerebro-spinal meningitis, it has been agreed upon by those best qualified to judge—

(1) That the serum when promptly and properly used effects a very substantial reduction in mortality, shortens the course of the disease, and reduces the proportion of disastrous sequelæ.

(2) That it must be used freely—repeated daily for at least three days in most cases, and is much longer as may be found necessary from observation of clinical signs and examinations of cerebro-spinal fluid.

(3) That the best results can be obtained only by persons expert in the technique and principles of the treatment and conversant with the clinical aspects of the disease—(*Public Health Reports No 69*)

THE MICRO BIOLOGICAL SECTION OF THE KING INSTITUTE OF PREVENTIVE MEDICINE, MADRAS, 1911

THE staff of the King Institute has a very full year's work to report no fewer than 3,805 samples and specimens of different sorts being investigated. Of these over 1,600 were in connection with plague, 637 specimens of blood for Widal's test, nearly 1,000 water analysis,

and a large miscellaneous list, including tests for Gärtner's bacillus, different strains of paratyphoid, Malta fever, Wassermann's reaction, blood for malaria, kala-azar, filaria, urine analyses, etc.

An investigation, begun the previous year, to determine whether syphilis, in one or both parents, is the cause of the large number of still-births in which the foetus is extruded in a macerated condition, was continued. A large number of such foetuses were examined, and the organism of syphilis was demonstrated in 25 per cent of all cases, exactly the same proportion as obtained the previous year. How unreliable the elicited history of the parents may be can be judged from the fact that no syphilitic history was obtained in thirteen out of fifteen cases in which the germ was demonstrated. Without exception when spirochaetes have been demonstrated, they have been present in the liver and next in order of frequency comes the kidney.

The following is a brief résumé of the work carried out by Captain Patton I M S, during the year—

The etiology of Oriental Sore—The parasite was found on four occasions in the peripheral blood of a suitable case in Ceylon, but, in order to find it, it is not only necessary to examine many blood films but also to select the case. Unbroken sores with swarms of parasites are the best for this purpose, for at certain times their margins become swollen and then show many macrophages packed with parasites and these on bursting liberate large numbers which are thus taken up by polymorphonuclear and mononuclear leucocytes. A case with multiple sores in this condition is more likely to have parasites in the circulating blood than a case with a single sore.

A series of experiments were carried out with house flies (*Musca nebula* and *Musca Sp?*) in order to try and find whether they were transmitting the parasite. Flies were allowed to crawl over a sore discharging parasites and then to settle on a scratch on my own person, this experiment was daily carried out for a long period but proved entirely negative. Further, not a single ulcer or sore other than the true Cambay boil was found which had become infected with the parasite and this experiment refutes the loose statements that during the fly season such skin lesions are very liable to become true boils. The same flies were next bred and fed on the discharge from a sore and then examined at frequent intervals. It was found that the parasite is readily ingested by the fly, but that it never flagellates but dies out after six hours, and that it is never passed out unchanged by the fly. These experiments carried out in the endemic area under the most favourable conditions conclusively prove that the house fly plays no part in the transmission of the parasite of Oriental sore.

Numbers of experiments were carried out with body and head lice with negative results and so also with the local stegomyia. This mosquito was carefully experimented with, but the developmental stage of the parasite was never found in it.

Phlebotomus Sp? probably *babu*, Annandale was only seen during the rains, but it was not possible to experiment with it as it could not be obtained in sufficient numbers. It was also not possible to experiment with fleas as they could not be obtained. Dogs which are common in Ceylon were never seen with sores.

A long series of experiments were carried out with the bed bug *Cimex rotundatus* and at first no evidence

of the development of the parasite was obtained, but on making further enquiries regarding the time when the infection is usually acquired it was found that over 90 per cent of those people who came to Cambay for short periods were infected during the cold weather. Bugs were then kept in a tin box surrounded with ice and in one bug dissected shortly afterwards the flagellate stage was recovered. The experiments were continued in Cambay and later in Madras, and it has been definitely settled that the parasite will only flagellate in the bug below a certain temperature (72° F 75° F), but that it dies out in the adult bug. Further experiments are now in progress with the nymphal stage of the bug to try and see whether the parasite will complete its development in one or other of the nymphal instars.

The Etiology of Kala Azar—Recently I had an opportunity of feeding bugs, *Cimex rotundatus*, *Cimex lectularius* and *Conorhinus rubrofasciatus* on a case of Kala Azar in whose peripheral blood there were hundreds of parasites. The bugs used were all bred from the egg and the first nymphal instar fed for the first time on the case, they were then kept in a cold incubator at about 72° F. Both in *rotundatus* and *lectularius*, all the developmental stages have been found, and the remaining bugs are now being fed on a case of Kala Azar in whose blood the parasite can only be found in small numbers. These bugs will be dissected at regular intervals up to the 21st and 24th day after they are fed on the case mentioned above, and in this way it is hoped to discover the post flagellate stage of the parasite, it is interesting to note that the parasite develops in *lectularius* in precisely the same way as in *rotundatus*. In *Conorhinus rubrofasciatus* the parasite degenerates 12 hours after being ingested, this was clearly demonstrated in one of these bugs which had fed twice on the case mentioned above and which had ingested over 500 parasites. This discovery in the first place shows that this bug cannot possibly be the natural transmitter of the parasite, and secondly, it refutes the hypothesis that the parasite of Kala Azar only develops in the bug *Cimex rotundatus* because it ingests a large quantity of blood. The first nymphal instar of *Conorhinus rubrofasciatus* ingests an enormous quantity of blood sufficient to make at least three ordinary blood films, yet the parasite rapidly dies out in its stomach.

A paper describing the above experiments is now in process of preparation.

Medical Entomology—A large amount of work on this subject has been accomplished, the life histories of all the South Indian biting flies having been worked out as well as those of ticks, fleas and lice. These observations will be published in due course in the Indian Bulletin of Medical Entomology.

The Vaccines Department of the Institute also report some most interesting and gratifying results.

Two hundred and twenty-three doses of anti-typhoid vaccine were sent out during the year and over 1600 doses of bacterial vaccines, including both autogenous and stock vaccines, were supplied during the year under report.

Staphylococcus vaccines—The most gratifying results were obtained by the use of these vaccines. Staphylococci were isolated from a variety of conditions, including furunculosis, syphilis, deep multiple abscesses resembling pyæmia and liver abscess sinuses. A polyvalent staphylococcal vaccine, made from not less than fifteen different strains, was used on a large scale by the hospitals in Madras City with apparently satisfactory results.

Streptococcus vaccines—Very gratifying results were obtained from the injections of autogenous vaccines in cases of puerperal sepsis, boils, abscesses, sinuses in muscles, bones and joints, from suppurative cellulitis, tonsillitis, etc.

Pneumococcus, gonococcus, and coli vaccines were all made use of with varying results.

The following note on the work done on dysentery vaccines is of more than ordinary interest.

Dysentery vaccines—During the latter half of the year under report an investigation into the bacteriology of dysentery occurring in the Lunatic Asylum at Madras was begun not only with the idea of ascertaining to what extent such cases of institutional dysentery are bacillary in origin but with a view to the preparation of a polyvalent vaccine for general use as a curative in all dysentery cases supposed to be of bacillary origin. The isolation of a given organism from stools is a rather complicated and delicate operation on account of the enormous numbers and varieties normally present. These difficulties are probably enhanced where we are dealing with pathological conditions of the intestinal mucous membrane and it took some time to get into the proper technique.

As the material at our disposal was limited in amount, this enquiry cannot be considered sufficiently exhaustive to support generalizations regarding the prevalence of bacillary dysentery in Madras, but it does seem to indicate that B dysenteriae is responsible for a large percentage of cases.

From the subjoined table it is seen that the B dysenteriae was isolated in six cases out of eleven, the organisms belonging to the Shiga as well as the Flexner types—

No	Patient from	Result of culture	REMARKS
1	Lunatic Asylum	Negative	Chronic dysentery
2	General Hospital	Ditto	
3	Lunatic Asylum	Ditto	
4	Ditto	B dysenteriae (Shiga group) isolated	
5	Ditto	B dysenteriae (Flexner group) isolated	Patient's serum gave strong agglutination 1 in 240 with organism. Recovery from use of autogenous vaccine.
6	Penitentiary	B dysenteriae (Shiga group) isolated	Marked agglutination 1 in 120
7	Lunatic Asylum	Ditto	
8	Ditto	Negative	
9	St. Thomas' Mount	B dysenteriae (Flexner group) isolated	Complete agglutination 1 in 80. Higher dilutions not tried, recovery from use of autogenous vaccine.
10	Palamcottah	B dysenteriae (Shiga group) isolated	
11	Lunatic Asylum	Negative	

A polyvalent dysentery vaccine was made from the Laboratory strains Shiga and Flexner together with strains Pavaday and Rodrigues. This vaccine was tried on nine cases of dysentery in the Lunatic Asylum eight of which are reported to have been cured after two or three inoculations in doses of 20, 50 and 100 million bacilli respectively, at intervals of three to eight days. The only unsuccessful case was one complicated with advanced ulceration of the colon which ended fatally three days after a single inoculation of 20 millions had

been given From an experience of previous epidemics the Superintendent of the Asylum considers that vaccine treatment has given excellent results

By far the most interesting case treated was that of a European child, one year old, suffering from acute dysentery of a very toxic type B dysenteriae (Flexner group Strain Mount) was isolated from the stool at the end of the first week and an autogenous vaccine prepared Soon after the first dose of 2.5 millions was given the temperature which had run high from the beginning of the illness showed a marked drop and the child which was in a typhoid condition made a rapid and uninterrupted recovery after the administration of two further doses of five and ten millions given at intervals of 48 and 72 hours respectively

THE TREATMENT OF ASIATIC CHOLERA WITH ADRENALIN

DR. NAAME of Tunis publishes an interesting memoir on the above subject in which he says that the two great symptoms of cholera, *viz*, vomiting and diarrhoea, to which may be added algidity, asthenia cramp, are indubitable signs of suprarenal insufficiency

Injections of adrenalin combined with Hayem's serum, or glucose serum in cases of anuria, he finds of great benefit He believes that adrenalin stimulates the functions of the suprarenal glands and assists in the formation of opsonins or alexines necessary to phagocytosis

The dose for an adult in slight or average cases is from 3 to 4 milligrams in the 24-hours for three or four days In severe cases with collapse, the author recommends the intravenous injection of 2 to 3 milligrams of adrenalin diluted with saline or glucose solution The injection may be repeated a second time within 24-hours Cholera cases are able to tolerate comparatively large doses of adrenalin He reports several successful cases treated in this way

PHILIPPINE PHOTOGRAPHS

THE Bureau of Science has completed a splendid list of selected photographs taken in the Philippines and covering a wide range of subjects Those interested in the different types met with in the Philippine Archipelago will find many different classes and tribes in the collection views of places of historical interest and localities famous for their natural beauty, of which the Islands have many, are included The whole list is well worthy of examination and should prove of interest to many in India

TREATMENT OF DYSENTERY

AN interesting article by Major Leonard Rogers, I.M.S., appeared in the *British Medical Journal* of June 22nd on the subject of the rapid cure of amoebic dysentery and hepatitis by hypodermic injections of soluble salts of emetine The results reported by Major Rogers were particularly encouraging, and many other medical men will probably wish to employ similar treatment in suitable cases To enable them to do so, Messrs. Burroughs, Wellcome

& Co are now issuing 'Tabloid' Hypodermic Emetine Hydrochloride, gr $\frac{1}{2}$, in tubes of 12 and 'Vaporole' Emetine Hydrochloride, gr $\frac{1}{2}$, in boxes of 10

Supplies may be obtained through Messrs Smith, Stanistreet & Co and other leading chemists in India

THE PUNJAB LUNATIC ASYLUM

LIEUTENANT-COLONEL EWENS, I.M.S., gives a most interesting account of the work carried out in the above institution for the three years 1909 to 1911

During the three years under review the total population has been 837, 817 and 841, practically showing a continuation of the small steady increase which had been always noted since the original opening of the building in March 1900, when it was only 465 As has been remarked before, this by no means betokens any general increase of lunacy in the province, but its explanation lies—as daily evidence by the number of persons brought by their own relations for treatment—rather in the fact of the asylum becoming widely known and its benefits appreciated It now rarely happens that a patient return to his home perfectly recovered (specially if his mental disease had formerly rendered him, as it usually does, a nuisance to his neighbors) without a few days afterwards some other similar person being brought here for treatment with that explanation These are not necessarily of the poorest classes, and even women are now occasionally brought by their husbands and relatives for the same purpose,—a fact which it may reasonably be claimed speaks very highly for the reputation of the institution, as this is a mark of confidence rarely given to any Government institution in this country As before noted the number of admissions and the average strength always fall slightly in the latter half of the cold weather

The number of female lunatics is always much lower than that of the males and this reversal of the usual rule in Europe is obviously due to the great objection people in this country have to placing their female relations in any institution, except under the direst necessity, and that explains the fact that the large majority of the women here are unfortunate people who during their malady have slipped away in an unguarded moment and have been arrested wandering and a nuisance, each mostly as "an unknown female" There have been many here for years whose names we do not know

The type of cases seen here continues the same as in former years speaking technically the diseases most common in Europe—idiopathic mania and melancholia (the German Manic Depressive)—are here very rare, and their place is taken in this country by mania due to excessive use of hemp (in the form of *bhang*, *ganja* or *charas* and the exhaustion, psychosis following privations, prolonged malaria or other acute illness) Hemp drug insanity is specially common and as the plant grows wild all over the province it is futile to suggest any means of regulating its sale or consumption After these come dementia praecox, which in every form is very common, especially Katatonia, and finally epilepsy is as frequent as in Europe, while general paralysis is never seen and paranoia but rarely As regards the characteristics of these several diseases, the most salient are their violence and dangerous tendencies, a fact very easily explicable, as all quiet, harmless insanes are willingly retained at home including even those likely to commit suicide, and only those so dangerous, noisy or obnoxious as to be a nuisance to their relatives are allowed to come here, so that the proportion always present of such people is very large and the amount of noise, violence, abuse

and aggression shown by many is unequalled in any European asylum

It is satisfactory to note that Lieutenant-Colonel Ewens, I.M.S., continues to earn the thanks of the Punjab Government for the good work he is doing and for his sympathetic administration of the asylum under his charge

SUBMUCOUS RESECTION OF THE NASAL SEPTUM

DR DAN MCKENZIE in a most interesting paper on the above subject analyses the results of 130 cases. The operation is most frequently performed for the relief of nasal obstruction from deflections, outgrowths, or spurs of the septum. In addition the operation may be necessary in cases where secondary effects of nasal obstruction are more striking than their initial cause, such as in chronic laryngeal catarrh, chronic catarrhal deafness, the annoying condition of "dropping mucus" in the back of the throat. Of minor indications for the operation are those in which it has to be performed to permit free access to the antrum, the ethmoidal or sphenoidal region, so that a polypus-bearing area may be efficiently dealt with, the removal of possible causes of reflex irritation causing asthma, headache, paroxysmal rhinorrhoea, etc.

Dr McKenzie is operating more and more largely, with increasing practice, under local anaesthesia. He gives in detail many important points in the technique and discusses the misfortune of button-holing and the disastrous results of perforation. The difficulties sometimes encountered are carefully considered, and a clear account given of the means by which they may be overcome.

The results likely to accrue from the operation may be summed up in a sentence—"the greater the nasal obstruction, the better is the patient pleased with the operation." "After the straightening of a deflected septum and the consequent opening-up of the nasal chambers to the air-currents, the voice becomes richer and more resonant—a grateful result particularly in patients who are actors, singers, or public speakers." On the other hand, the resection of the septum necessarily weakens the bridge of the nose, so that any marked degree of violence may flatten the organ beyond recognition and beyond recovery. It is not an operation on this account to be recommended to those likely to engage in boxing, football, wrestling, etc. (*Journal of Laryngology, Rhinology, and Otology*)

WASSERMANN'S NEW VIEWS ON CANCER TREATMENT

As the views of Dr A von Wassermann on the treatment of cancer has been discussed in the

lay press, it is desirable to lay before our readers a synopsis of a recent paper of his for which we are indebted to the *Journal of the American Medical Association*—

December 20, Prof A von Wassermann delivered an address in the Berlin Medical Society (*Medizinische Gesellschaft*), which dealt with the problem of exerting a therapeutic influence on tumours by way of the blood. At the same time he published an extensive article on this subject in No 51 of the *Deutsche Medizinische Wochenschrift* from which I extract the following extraordinarily interesting statements. In order to determine in his experiments whether carcinoma cells removed by operation could live longer in the blood of cancer patients than in the blood serum of healthy persons, sodium tellurate and sodium selenate salts, first suggested for that purpose by Gosio six years ago, were employed as indicators to show whether the carcinoma cells had retained their vitality or not, these salts have the special property of becoming reduced to a metallic form in the presence of living cells, and precipitating as a blackish or red sediment. By these experiments, it was shown that the reduction occurred in both the normal and the cancer blood serum, so that the normal serum had not destroyed the tumour cells, but it was also shown, as the most remarkable result, that selenium and tellurium were precipitated only on the carcinoma cells themselves. The presumption that this peculiar observation was to be referred to a specially close relation between the tumour cells and the selenium and tellurium salts, was confirmed on living mice affected with carcinoma. Solutions of these salts were injected locally into the tumours. Thereupon, it was shown that a softening and liquefaction of the tumours occurred and the conclusion might be drawn from this that in selenium and tellurium, substances had been found which destroyed tumour cells as soon as they reached them.

The next problem consisted not in injecting these salts directly into the tumour, because the prospects of healing a tumour by local treatment are extraordinarily slight, the possibility of reaching all of the tumour cells in this way seems almost hopeless, while on the other hand, a further growth takes place if only a few of the tumour cells remain alive. The problem of introducing selenium and tellurium into a tumour and saturating it with these bodies, can be solved only by the use of such chemical preparations as distribute themselves rapidly in the living organism and are diffusible. Mouse carcinoma, especially, is a very poorly vascularized tissue. For this reason von Wassermann selected as a transporting agent for the selenium and tellurium dyes of the fluorescein group, of which he knew from experiments which he had made some fifteen years ago with Ehrlich, that after injection into the circulation they distribute themselves very rapidly, even in such poorly vascularized tissues as the cornea and the aqueous humor.

After many painstaking experiments with hundreds of preparations, Wassermann obtained a preparation consisting of a compound of eosin and selenium which, however, it is claimed, needs careful chemical treatment for the development of its full activity. This substance is easily soluble in water. Healthy mice, averaging 15 gm in weight, will tolerate 25 mg of this substance injected into the caudal vein. As the most striking symptom there appears immediately an unusual reddening of the entire animal, which appears before the end of the injection and becoming more marked, causes the snout, the eyes, and the paws to take on a lively red colour. If, however, this amount is injected into a mouse affected with a tumour, there appears after the first two injections, which are made on successive days, scarcely any change. After the third injection palpation shows a marked softening of the tumour. This softening is still more marked after the fourth injection, so that there is no longer the feeling of a solid tumour, but rather that of a fluctuating

cyst Provided that the preparation is chemically good, there occurs after the third and especially after the fourth injection an absorption of the liquefied tumour content. The soft fluctuating sac becomes smaller, the tumour capsule becomes lax, being too large for its contents, and in moderately large tumours, the configuration of a circumscribed tumour can no longer be distinguished, but only a long adenomatous cord can be felt. As the result of the fifth and sixth injections in favourable cases, the absorptions and diminution proceed so that one gets the feeling of an empty sac, and in case no intercurrent disease occurs, the last remnant is absorbed and the animal is cured in about ten days with a disappearance of all remnants of the tumour. However, this undisturbed smooth healing does not always take place, with large tumours of the size of a plum and with those in which the liquefaction and softening of the contents take place very quickly the animals frequently become severely ill, feel cold and perish. This occurrence is so frequent and regular that there can be no doubt that this illness is connected with the absorption of the liquefied tumour contents. The animals in such cases succumb to the toxic action of material absorbed from their own tumours. With reference to recurrences in the healed animals, Wassermann has kept such animals for months without observing any sign of recurrence. It is important that all the tumour cells are actually destroyed. If a necropsy is made on a mouse in the stage at which the tumour is softened and gives the feel of a liquid, the tumour which ordinarily appears solid and of a grayish white colour is coloured an intense red in marked contrast to the colourless or only slightly tinged surroundings. Thus it is seen that the remedy has been deposited selectively in the tumour, indicating a pronounced affinity of the remedy for the tumour cells. In mice in which there is the feeling of an empty sac in place of the previous tumour, there is found macroscopically a bacon like detritus which has no resemblance to cancer tissue. Such a curative action is obtained with a good preparation in from eight to ten days. The next step was to determine whether mice whose tumours were not caused by inoculation, but which had become spontaneously affected with carcinoma, would be influenced by the preparation in a similar way. Two mice, one of which had a spontaneous tumour the size of a hazelnut and the other one the size of a plum, were cured. One of them is still living nearly three months after treatment, without any recurrence, the other died fourteen days after the cure, and at the necropsy no trace of the tumour structure could be found macroscopically.

On the basis of all these facts, Wassermann believes that he is justified in asserting that it is possible by means of a properly prepared eosin selenium preparation, introduced by way of the circulation to cure without recurrence fully developed tumours in mice, by the destruction of their cells with softening and absorption of the material, provided that the tumours have not already attained too large a size compared with the body weight (not larger than a cherry). With justifiable caution, however, Wassermann concludes with the warning that for the present we have no reason to believe that this remedy will act in a similar way on human beings affected with tumours. He has not investigated this question closely, but he is of the opinion that it does not appear impossible that by further work in the same direction progress may be made in human therapy. Wassermann's communication, which was received with great interest, was illustrated with very instructive drawings. It was also supported by the explanations included in the address made by Professor von Hansemann, who from the beginning carried out anatomic investigation of the mice under treatment and at the necropsy. According to him, the eosin selenium has a distinctive action on the nuclei of the tumour cells, and thus the tumour breaks up into a detritus which is absorbed without residue. The remaining normal tissues of the body, according to the investigations of Hansemann, are not affected by the remedy.

RAT BITE DISEASE OR SODOKU

WE in India are only too well aware of the fact that rats are disseminators of plague, but few have seen or even read of cases of a disease produced by the bite of a rat.

Such a disease has been known for many years in Japan and is known there by the name of *Sokoshro* or *Sodoku*, and the Japanese physician Miyake has recently published a number of cases, and Dr F. Proescher of Pittsburgh, U S A, has recently published another case from the account of which in *International Clinics* (Vol IV, 1911) we extract the following. It appears that in the past 70 years about 36 such cases have been published. It is a disease *sur generis* transmitted by a rat-bite from an infected rat to human beings. It is a primary disease of rats, comparable to rabies which is a primary disease of canines. It is known in Japan and in China, and a few cases have been reported in Europe and in N America.

It is said that it is the house and the swamp rat that is infectious, and there appears to be a strange predisposition or personal susceptibility to its influence. Ogata of Tokyo has isolated a protozoon, the movable body which he called *sporozoon muris*.

The disease is ushered in by chill and fever and pain at the site of the bite which has generally healed. Then vesicles or pustules form at the site of the wound with lymphangitis. The fever is intermittent in type. The patient rapidly becomes cachectic and suffers much. A peculiar erythematous or papulous rash appears on the trunk and limbs which is said to be pathognomic, the incubation period is very variable, it may be days, weeks or months, 14 to 30 days are usual. The pain and swelling at the site of the bite are well marked and gangrene or local necrosis follows. The lymphangitis occurs early disappears and does not recur. The glands become enlarged, but are said to be painless. The pyrexia is intermittent with periods of three or four days of apyrexia. The exanthem is important and varies in size from that of a pea to that of a '25 cent piece,' it is regular in outline. The patches are outlined, raised, and are generally painless. An acute urticaria sudden and irregular often appears towards the end of the disease. Profuse perspiration often follows the fall of the temperature. There is nothing special in the circulatory or respiratory systems, the appetite is lost, there may be nausea and vomiting, the tongue is coated and there may be diarrhoea in chronic cases. The nervous symptoms may be marked, muscular pains are common and often intense.

Diagnosis is made from the following points: rat-bite injury, intermittent fever, bluish red exanthem and the muscular pain. The mortality of Miyake's cases was 10 per cent. There is no specific remedy. It is not yet certain that the disease as observed in Japan is identical with that seen in America.

VENTILATION PROBLEMS

In the *Public Health Journal* (Dec 1912) published at Toronto, Canada, there is a valuable article by Dr Thomas R Crowder ("The Superintendent of Sanitation, the Pullman Co, Chicago"), in which he discusses the problem of fresh air in the varying conditions of great heat and great cold which characterize the climates of Canada and the States. We need not quote the results of the numerous test made to determine the condition of the air in sleeping cars which was found to be satisfactory, but the following general remarks on ventilation are worth reproducing —

It has been attempted to determine the ventilation of sleeping-cars in terms of air-supply, using carbon dioxide as the only available basis of computation. In order to pass judgment on the findings recorded, it is necessary to know the hygienic significance of respiratory contamination of the atmosphere, and, if possible, to establish the cause of discomfort which may arise, supposedly as the result of an insufficient air supply.

According to the older theories the sensations of discomfort arising in enclosed spaces had their origin either in an excess of carbon dioxide or an insufficiency of oxygen. Pettenkofer cast the first serious doubt on the correctness of these theories. Hermanns proved that air containing 15 per cent oxygen may contain 2 to 4 per cent carbon dioxide and not be harmful. On removing the carbon dioxide there was no great discomfort even when the oxygen was reduced to 10 per cent.

It seems to be established beyond reasonable doubt that discomfort is not due to any change in the chemical composition of the air, but to physical changes only, and that to maintain a normal heat interchange between the body and the air is to avoid the development of those symptoms which are commonly attributed to poor ventilation. A certain amount of fresh air must be supplied, of course, but the most vital element of the ventilation problem becomes that of regulating the temperature of the air. The question of how to ventilate a railway car is therefore chiefly a question of how to regulate its heat.

It has happened that a few of the cars, considered in this work to have been uncomfortable, have been called "close" or "stuffy." The temperature of these cars has invariably been high. There has sometimes been an unpleasant odour. This cannot be ventilated away so long as its source remains. A high temperature renders such odours more noticeable. The most marked offensiveness I have ever noticed was in a day coach, where the air was of such a degree of chemical purity as to indicate ideal ventilation by any standard that has ever been proposed. The car was hot and had many filthy people in it. On the other hand, with perfect comfort has been associated the highest chemical purity.

It seems probable, furthermore, that one main cause of the complaint of poor ventilation in the sleeping-car berth is purely psychic. We are used to sleeping rooms with walls and ceilings far from us. In the berth they are very close. Their very nearness is oppressive. It seems as if there cannot be enough air in this small space to supply our wants. The sensation is often quite independent of the amount of air supplied and even of the temperature.

Even under the older applied principles of ventilation, the air supply of sleeping cars, as determined in this study, is ample under nearly all conditions. The average carbon dioxide in the air of running cars falls well within the limits of contamination permitted by the earlier investigators, and it is relatively rare that the individual observations show more than 10 parts in 10,000. In the light of the newer conceptions, which

have as yet been applied in practice only to a very limited extent, this air supply is ample under all conditions observed. No danger to health is to be apprehended under the conditions ordinarily obtaining even in still cars. They are occupied only for short periods as a rule and are not uncomfortable if kept cool.

It would seem that the results obtained by the type of exhaust ventilator investigated in this study which is now a part of the standard equipment of Pullman cars, are entirely adequate to meet the demands of hygiene, and that those difficulties and discomforts which do sometimes arise are due to other causes than lack of a sufficient amount of fresh air or to excessive vitiation. It is extremely unlikely that increasing the air supply which now amounts to from six to ten or more times the cubic content of the car each hour and must maintain considerable motion of the atmosphere, would aid in any other way than by making overheating more difficult to bring about.

Overheating is the paramount evil. It is the thing to be chiefly guarded against in the attempt to maintain comfort and good hygiene. It is not feasible to cool the naturally overheated air in summer, or to dry it when excessively humid. Fan motors and open windows are the available means by which the difficulties arising in hot weather may be most readily overcome. Carry away the body heat as rapidly as possible by a strong current of air.

Reviews

Syphilology and Venereal Disease—By C. F. MARSHALL, M.D., M.Sc., F.R.C.S. Pages 344, Plates 6. Messrs Baillière, Tindall & Cox.

HERBERT SPENCER has observed that when we order a pair of boots we have a right to expect that the bootmaker knows something about his trade. From a perusal of Mr Marshall's book it is obvious that the author thoroughly understands the subject he is writing about, so that anyone desirous of investing in a book on Syphilology cannot do better than buy the one under review which we can strongly recommend.

The general arrangement of the subject-matter is admirable, each chapter being self-contained and followed by an excellent list of references to recent bibliography and capable of being read with interest by itself.

The first chapter treats of the history of the disease, a subject naturally somewhat debatable. The author, however, has treated it in a most open manner quoting the diverse opinions held as to its origin, and, as he states, seeing that syphilis is usually contracted by sexual intercourse, it seems only rational to regard it as the oldest disease afflicting mankind. There are, however, authorities who state that, in spite of the most painstaking research among thousands of human skeletons of prehistoric and ancient origin there does not exist one bone showing unequivocal signs of syphilis.

The chapter on generalities is interesting and full of information. The author rightly lays stress on the fact that syphilis is not an apyretic disease and describes the most common forms of fever.

Scabies although often contracted during sexual intercourse is not usually regarded as a venereal disease

As regards the diagnosis of syphilis no mention is made of the Noguchi reaction given by the cerebro-spinal fluid in syphilitic and para-syphilitic diseases of the cord and brain

The author takes an excellent and moderate view of the diagnostic value of the Wassermann reaction. Although the Wassermann reaction may tell one in certain cases whether a person has or has not the syphilitic infection, it affords no clue as to whether a given lump is a gumma or an epithelioma, as the concomitance of syphilis a malignant disease is by no means uncommon. So many medical men forget that a positive serum reaction merely indicates that a patient has had syphilis. In this connection one would do well to meditate on the remark made by Trousseau once when lecturing on medicine "Pray, gentlemen, let us have a little more art, a little less science"

As Mr Marshall states, clinical evidence should never be abandoned in favour of a laboratory test

In conclusion, the author is to be heartily congratulated on the production of a volume both useful and readable

Medicine Label Book, Parts I and II with doses of Official Remedies and Extra Pharmacopœia for use in Dispensaries, containing 1,626 labels of all sorts —
By SENIOR SUB ASSISTANT SURGEON KHAN SAHEB SOLEIMAN KHAN The Commercial Press, Meerut

THESE books of labels should be found very useful in Government dispensaries. The labels for poisonous and non-poisonous medicines are distinguished by the colour of the paper. The supply of labels is abundant and the cost very small. It would well repay civil surgeons to order copies of this book for their dispensaries

An Operating Theatre in Private Practice —

By C HAMILTON WHITEFORD, M.R.C.S., L.R.C.P.
Messrs Harrison and Sons, London

THIS little book will be found very useful to practitioners in the fitting up of an operating theatre. Many valuable hints are given which will be of considerable assistance to the young surgeon. It would be expected, however, that the surgeon who has sufficient work to require an up-to-date operating theatre for his own private use, would have formed very definite ideas of his own regarding the essentials and accessories

The British Guiana Medical Annual for 1910, 17th year of Issue —Edited by K S Wise, M.B., B.S., B.Sc (Lond) 5/- net. Printed by "The Argosy" Co., Demerara, 1912.

THIS interesting and instructive Medical Annual has been delayed owing to the illness of the Editor. We are glad to be in a position to congratulate him not only on the recovery of his health, but also on the excellency of the

volume, now before us, for which he is responsible

From our point of view, the most important article is that by the Editor himself on the Naslin Treatment of Leprosy in British Guiana. It is of special interest as Professor Deycke himself practically inaugurated the treatment in 1908. His methods have been carried on ever since, in the later months somewhat modified. The conclusion drawn by the author is, as regards Deycke's statements that injections of Naslin cause definite changes to take place in the lepra bacilli, and that the injections cause an arrest of the progress of the disease, "that some cases have undoubtedly got considerably worse during the treatment, the great majority have remained in *stata quo ante*, while a few have improved to such a degree that in three cases the results approximated to a cure." Whether the injections played any part in the disappearance of leprous deposits is open to considerable doubt

Further Researches into Induced Cell-Reproduction and Cancer, Vol II, consisting of papers by H C Ross, T W Copper, and E H Ross. Illustrated. The John Howard McFadden Researches Publishers John Murray, London, 1912. Price 3/6

It is only a short time ago since we had the pleasure of reviewing the first volume of the published results of these researches into induced cell-reproduction and cancer. The present volume is concerned with the elucidation of the theory that cell-production and possibly cell-development are directly brought about by chemical agents set free by cell-death. Experiments are described to show how the induced division of individual cells, brought about by certain agencies, has been confirmed by observations on animals. The authors show that it is possible to produce cell-proliferation and swellings resembling tumours in the living creatures by the action of the same chemical substances that induce individual cell-multiplication. It is demonstrated that the normal individual cell reproduction is brought about by the cells themselves absorbing the chemical agents set free as the result of cell-death. These agents are called auxetics, and definite benign tumour formation has been successfully induced in certain tissues *in vivo* by the injection of certain auxetics

The hypothesis as to the causation of malignant proliferation has for its basis the presence of two factors: first, chronic local injury with the production of auxetics causing prolonged normal cell-proliferation, secondly, certain substances, termed by the investigators, augmentors which are simultaneously absorbed by the cells. At present only two natural augmentors are known, choline and cadaverine. The function of the augmentor is to increase manifold the action of auxetics in causing cell-

proliferation. A certain amount of success seems to have attended the attempts made to produce malignant growths in animals by inoculation of different tissues with auxetics and augmentors in combination, particularly when the auxetics are rendered alkaline beforehand.

Chapter III gives a detailed description with illustrations of the division figures induced in lymphocytes by means of auxetics, which appear to support the revolutionary idea that the chromosomes are formed from the granules lying immediately outside the "so-called nucleus." The remaining chapters are full of interest and new conceptions and will well repay perusal. The volume is beautifully illustrated and exceedingly well printed. With regard to the methods employed, results obtained, and deductions drawn by the authors, we have no first-hand opinion to offer. The subject is a highly technical one, and the conclusions arrived at will require confirmation at the hands of other expert workers before they can be accepted in their entirety.

Harelip and Cleft Plate—By JAMES BERRY, B.S. (Lond.), F.R.C.S., and T. PERCY LEGG, M.S. (Lond.), F.R.C.S. Pages 324. Illustrations 242. Price 12s 6d net. Messrs J. and A. Churchill, 7, Great Marlborough Street, London, W.

THE first three chapters deal with development, anatomy and physiology, and varieties of the deformities which are being considered, they are complete and are well illustrated. The cases presented are mainly those seen by the authors, but other sources have not been neglected.

The succeeding chapter discusses the functional results of cleft palate, and in it the mechanism of normal speech is compared with that of a person suffering from cleft palate.

The treatment of harelip is next considered, as regards the age for operation it should be performed within the first few weeks of life and, provided the infant is healthy, the sooner the better. The authors, agreeing with the majority of surgeons, believe that the closure of the cleft in the lip has a good effect upon one in the palate, provided that it is not proposed to perform Biophy's operation.

No elaborate methods are used, if the margins are fully parallel only curved incisions are made, if not, a flap is formed. Silkworm gut is preferred for sutures which are made with fine fully curved needles, and the first stitch should be passed within the nostril to restore it to its normal shape. The treatment of the premaxillary bones is fully discussed, if only slightly prominent, the lip should be closed over it.

In bad cases reduction of the premaxillary deformity may be effected by either pressure with strapping or a wedge-shaped portion of the nasal septum is removed. Removal of the bones

themselves on extraction of the incisor teeth are condemned.

There is an excellent chapter on secondary operations for faulty results.

As regards cleft palate, the factors which lead to the success of the operation are discussed.

The operation which the authors prefer is then described, it is separation of a mucoperiosteal flap and direct suture of the paired edges with or without lateral incisions as the case may be, the various stages are most carefully and clearly given and are well illustrated. The section on the training in the correct method of articulation is also excellent.

The final chapter discusses other operations, *i.e.*, Biophy's, Davies-Colley's and Lane's. A careful account of Biophy's latest technique is given, and the *pros* and *cons* of it fairly discussed, also the others.

The book is an excellent one and the publishers are to be congratulated upon their share of the work.

The Therapist's Vade Mecum.—By K. S. ANNIHOTRI, Ph.G., Kolapur Mission Press.

THE practitioner out in India can hardly be recommended to read this book which teems with errors in spelling and grammar.

It has taken us some time to grasp the author's meaning of several of his definitions, which are calculated to mislead rather than to define.

We note that "Centigrade" is a kind of thermometer.

Seeing that there are on the market several books of not much larger size and more accurate in detail, we do not see that the author has supplied any great want and cannot recommend anyone to add *The Therapist's Vade-Mecum* to his library.

Electricity, Medical and Surgical.—By C. S. POTTIS, M.D. Messrs J. & A. Churchill & Co.

IN compiling the volume the author has evidently had in mind the difficulties experienced by the practitioners in the uses and application of electricity, and has been at pains to make clear the very varying methods of its use and the numerous conditions to which it is applicable.

The earlier section of the book deals with the simpler phenomena of magnetism and current production, and is, in fact, a short and elementary treatise on electricity, affording sufficient theoretical knowledge for the use of the Electrotherapist. The major portion of the work is taken up by the application of this knowledge to diagnosis and treatment. The sections on electro-diagnosis is one particularly worthy of attention, illustrating as it does the methods of procedure and the inferences to be drawn from the phenomena produced.

Medication by cataphoresis is fully dealt with, and are also the clinical indications for its application as well as the use of high frequency currents.

The phenomena of radiography and radioradiation therapy are also clearly explained. Throughout great pains have been taken to depict both verbally and pictorially the apparatus required and the diagrams leave nothing to be desired.

The book has been carefully written for the guidance of the general practitioner and is not an elaborately technical volume, comprehensible to the expert only. To those who have a source of current at their disposal, this volume should prove a most valuable guide to both diagnosis and treatment of the many diseases which are so frequently handed over to the specialist.

Domestic Medicine—By SARODA CHARN MUKHERJEE. "Sathi" Press, Calcutta.

BABU S. C. MUKHERJEE has published in Bengali a very useful and accurately compiled handbook of domestic medicine. The book is written in a clear and easy style and adapted to lay readers.

Anæsthetics—By J. BLUMFIELD, M.D. Third Edition. Crown 8vo, pp 134 + viii. Twenty-two figures. Price, 3s 6d net.

IN half a dozen years Dr. Blumfield's useful little book on Anæsthetics has run through two editions, and this is the third, revised and up-to-date. It contains a description of spinal and local anæsthesia which many surgeons will be glad to read. One of the most useful chapters is on the question of position, and chapter viii on dangers and troubles is very clear and useful. In the chapter on the choice of an anæsthetic, the indications are clearly and well put, and we note a statement that "ether has been proved to be at least five times less dangerous than chloroform," and the use of ether is recommended to the ordinary practitioner who seldom has to give an anæsthetic. Of course, these remarks on chloroform and ether do not apply to India where the use of chloroform is but rarely followed by danger.

Catechism Series Anatomy, Pt. I Third Edition. Edinburgh, E and S Livingstone. Price, 1s.

THIS is the third edition of a useful little book, which teaches anatomy by a series of questions and answers. It is, of course, only intended to assist the student in reviving his knowledge and is in no way fit to take the place of a text-book. In this new edition the B. N. A. or international nomenclature has been used, which at first will appear strange to older men. We can commend the book for the rapid revision of a student's knowledge just before his "exam" and after a thorough study of dissecting manuals and other text-books.

Systematic Case-taking—a Practical Guide—By H. L. MCKISACK, M.D. London. Baillière, Tindall & Cox, 1912. Crown 8vo, pp 166 + x. Price, 3s 6d net.

THIS should prove a very useful book to students. The methods of examination are those

which may be carried out in the wards or in the hospital clinical room. The chapters on the chest and abdomen are particularly good. The pages on examination of the urine are very useful, and in the appendices a lot of useful notes are added.

We can highly commend this book, and it could be well used as an introduction to Dr. McKisack's *Dictionary of Medical Diagnosis*.

Duodenal Ulcer—By B. G. A. MOYNIHAN, Second Edition, Enlarged. Published by W. B. Saunders Company.

WE are glad to see the second edition of this book which is the only complete monograph on the subject and that by a surgeon who has, indeed, done more than others 'to disentangle the authentic symptoms of duodenal ulcer and recognize clearly the well-defined clinical picture of this disease'. In our notice of the first edition we protested against the surgical anagnathism which dogmatically affirmed that hyperchlorhydria is the medical term for the surgical condition, duodenal ulcer, and we are glad to note that the author has so far altered the expression of his view as to inform us that by hyperchlorhydria he means the clinical symptom complex included by physicians under the term, not the mere chemical fact of excess of hydrochloric acid in the gastric secretion, but we opine that if this chemical fact be elided from the physician's clinical concept, the result would be very much the same as the play Hamlet without the Prince. Nowhere does Mr. Moynihan attempt to give us a pathology of duodenal ulcer. His statement that ulcer is oftenest met with in the first portion of the duodenum on which the acid chyme impinges suggests in fact that ulcer comes of hyperacidity of the chyme, the ulcer being in short an end result of hyperacidity. This is practically all the pathology we find in the new edition in which, however, one finds a considerable increase in the space devoted to pathological anatomy, also special chapters devoted to gastro-jejunal and jejunal ulcers appearing after gastro-enterostomy for duodenal ulcer, and associated with similar symptoms including hyperacidity of gastric secretion. These secondary ulcers deserve rather more consideration than they receive at the hands of the author. With a larger body of facts, if it prove that the liability to secondary ulcers in the jejunum is great, we may find that early operation on the "anagnathism" alone is not the eminently satisfactory procedure Mr. Moynihan asserts it to be.

The author is modest in his claim that in the present edition the changes in the text are chiefly concerned with the result of X-ray examinations and the differential diagnosis of duodenal ulcer. On the contrary, we find small but important changes in many places, changes that make for the improvement of this important monograph. These with the additions

already indicated, and an appendix containing an account of later operations are the chief alterations. The monograph will have a permanent place in surgical literature.

Collected Papers—By THE STAFF OF ST MARY'S HOSPITAL, Mayo Clinic, 1910. Published by W B Saunders Co.

ALL the surgical world will welcome this second volume of the collected papers of the staff of a hospital which has acquired a unique reputation for the excellence, variety and abundance of its surgical work, both operative and pathological and statistical. The whole of the major operative work is done by the brothers Mayo, and some idea of its amount may be obtained from a table on page 583, from which we learn that 658 patients were operated on during July, of which 367 were grave major operations on all parts of the body.

All the papers on operative procedure are by the Mayos themselves, and each one of these papers is a model of conciseness with completeness, a perfect clinical lecture, dealing primarily with the physiology and pathology of the part under consideration, the diagnostic indications of disease, and finally reviewing the possible modes of attack and the special mode of adoption. No surgeon can read a paper by either brother without interest, pleasure and usually profit. The Mayos with a ripe surgical experience rarely rivalled we never dogmatic, but aim rather at so expounding each subject that the procedure adopted and the technique followed appeal to the reason as being correct.

The other papers by the minor staff of St Mary's Hospital are mostly technical and pathological. These alone would make the volume worth possessing. We trust therefore that this annual issue of a volume of papers from St Mary's will be continued from what may be called the post-graduate surgical school of America.

Landmarks and Surface Markings of the Human Body—By L. BAILEY RAWLING, M.B., B.C. (Cantab.), F.R.C.S. (Eng). Fifth Edition. Pages 96 x viii and 29 Plates. Size Demy 8vo. Price, 5s net. H. K. Lewis, 136, Gower Street, London.

There is little to be said of a work which requires a new edition within the space of a year. No better criterion of its popularity could be produced. The writer had the pleasure of reviewing the first edition and the favourable opinion formed of it then is enhanced by the perusal of the present edition.

The letterpress is the same as that of the previous edition, but the illustrations have been still further improved, there is little or no room left for advance in this direction. The book

can be thoroughly recommended to those in need of a clear and concise account of the surface markings of the body.

Golden Rules of Skin Practice—By DAVID WALSH, M.D. Bristol: John Wright & Sons, Ltd. Fourth Edition. Price, 1s.

THIS is the fourth edition of this useful little book in the past 12 years. It is a wonderful condensation of present knowledge of skin disease. It emphasises the remark that "the best dermatologist is the best physician."

The little booklet, not bigger than a small cigarette case, is full of useful information and can be highly recommended.

Lessons on Massage—By MARGARET D. PALMER. 4th Edition. Publishers: Baillière, Tindall & Cox. Demy 8vo. Pp. 292 x xvi. Illustrations 118. 2 Coloured Plates. Price, 7/6 net.

THE book consists of general and special instructions on massage, and of information on anatomy and physiology. Regarding the latter, the authoress states in the preface to the first edition that she has "culled from the standard works what is indispensable for the pupil masseuse to study, that she may have under one cover sufficient information on those subjects to enable her to learn her work intelligently, without burdening her memory with unnecessary details." The amount of information on these last subjects occupies more than half the bulk of the book, and in our opinion is to a great extent unnecessary for the masseuse. We can, for example, see no useful object in inflicting on the unfortunate pupil tables giving the name, position, origin, insertion, action, and nerve-supply of nearly every muscle in the body, nor, to give a particularly useless instance, of expecting her to know the relations of the œsophagus inside the thorax. Even so, the information given is not always correct. Probably the most glaring example we have noticed is the statement that "in flexion of the knee the posterior ligament tightens, in extension the anterior tightens." Where the authoress treats of her own subject matters are different. The descriptions are nearly always clear, and helped out by good pictures. The only actual mistake noted in the instructions is that the nurse is directed, when massaging the ovaries, to stand with her back to the patient? The different movements in massage are clearly explained in general, and are described in detail for different parts of the body and for different ailments. Wen-Mitchell and Nauheim treatments and bandaging are also considered. There have been 11 issues of the book in 12 years, four of them being new editions, so that the book evidently fulfils a distinct want, and appeals to a considerable public. More than half of the 118 illustrations are on massage and bandaging, the others being anatomical.

Correspondence

"THE CINCHONA ALKALOIDS"

To the Editor of 'THE INDIAN MEDICAL GAZETTE'

SIR,—Your article in the July number of the Gazette on the subject of the Cinchona plantations and the efficacy of the Cinchona Alkaloids opens up a question of considerable practical importance.

This importance is not solely medical or pharmacological but is also financial, for it is obvious that the cost of issuing one antiperiodic in large quantities broadcast may seriously limit the extent to which this can be done.

You raise two main issues in your article—

1 The relative efficiency of the hydrochloride and sulphate of quinine.

2 The efficiency of the cinchona febrifuge as an anti-malarial drug and also the disadvantage of its unpleasant taste, its liability to cause sickness, and so on.

You also invite the Government of India to initiate an enquiry as to the pharmacology and chemistry of these alkaloids.

This latter matter has already been taken up. Major Mac Gilchrist's work on quinine has already been published in the Scientific Memoirs, whilst extensive clinical experiments were carried out last year in the wards of the Medical College Hospital, Calcutta.

1 The relative efficiency of the sulphate and hydrochloride of quinine.

Taking in every case the presence of the malarial parasite as the only guide to the nature of the fever, it may be safely affirmed that the sulphate of quinine is more effectual than the hydrochloride, that it stops the fever more quickly, and that it requires a smaller dose to do so.

Malignant tertian cases require more quinine and more time than the benign cases but forty grains of quinine sulphate given over three days will in a series of cases bring the temperature to normal.

2 The efficiency and drawbacks of the cinchona febrifuge.—In cases of true malarial fever—again taking the presence of the plasmodium as the standard—cinchona febrifuge is at least as effective as quinine, in fact, so far as my cases go, it is more effective than quinine. It reduces the fever sooner and with a smaller dose, than either the sulphate or hydrochlorate of quinine.

There are good reasons for this superiority. Cinchona febrifuge is not a simple salt, it is a mixture of quinine, cinchonidine, cinchonine, quinidine and amorphous alkaloid, these being present in an amorphous and uncrystallizable condition.

The amorphous alkaloid is more readily absorbed than the crystallised quinine, sulphate or hydrochloride and is therefore more effectual as an antiperiodic. The traditional nauseating effect of large doses of cinchona febrifuge is due to the easily assimilable amorphous alkaloid which being quickly absorbed, upsets the stomach in the same manner that large doses of quinine sulphate are apt to do.

I do not agree with you that the amorphous alkaloid should be isolated and converted into sulphate. That would deprive it of its most valuable property of rapid assimilation. What is wanted is that it should be separated and made available for use as amorphous alkaloid alone, to the exclusion of the less active allotropic quinine, quinidine, cinchonine and cinchonidine.

By using suitable doses of the febrifuge no nausea nor unpleasantness need be feared. It may be successfully administered as the three grain tablets issued from the Juvenile Jail, or perhaps preferably, as freshly made up three or five grain pills.

If these statements are substantiated by further experience considerable saving will result both to dispensary and public health authorities, for the market price of quinine sulphate is now Rs 12 per lb that of cinchona febrifuge Rs 6, an important matter when dealing with thousands of pounds of quinine.

But it is essential in dealing with this question that only malarial cases be treated, i.e., cases in which the parasite has been clearly demonstrated.

Neither quinine sulphate nor cinchona febrifuge will cure enteric fever, tuberculous dengue or the numerous other pyrexias so common in this country and it is possible that some of the disavowal into which the febrifuge has fallen is due to its administration to patients suffering from one or other of these diseases.

Whilst dealing with the subject I wish to endorse the able letter of Major Fry on Vital Statistics. It is not until a systematic blood examination is made of all the fever patients

attending the outpatient clinic of a hospital that one realizes how relatively uncommon malarial fever really is. In the last five months we have examined at the Chinsurah Imambrah Hospital the blood of every patient complaining of fever or enlarged spleen up to date (15.7.12), 654 specimens have been examined and parasites found in 100, about 15 per cent of fever cases.

Putting the figures another way, at the same hospital, with approximately equal attendances, I obtain the following results.

	1909-1911 "Malaria" cases average attendance 3 yrs	Percentage of total out door attendance	1912 Verified malarial actual attendance	Percentage of total out door attendance
March	117	17.56	22	2.76
April	113	19.33	18	1.06
May	111	17.62	22	2.86
June	88	15.55	15	1.92
Total	429		77	

Thus, even at a Sadar hospital with an assistant surgeon in charge, there was an error of 550 cases in four months! What the chowkidar's error may be I cannot venture to estimate. These results are, I think, of considerable interest, and, apart from increased accuracy in diagnosis and consequently success in treatment, have led to a considerable saving in quinine.

I am, Sir,

Yours obediently,

E. L. WATERS,

MAJOR, I.M.S.,

Civil Surgeon, Hooghly.

A CASE FOR DIAGNOSIS

To the Editor of 'THE INDIAN MEDICAL GAZETTE'

SIR—The following case may be of sufficient interest to your readers, from a medico-legal aspect, to warrant insertion in your columns.

In the Penal Settlement of Port Blair there is a system whereby male and female convicts may—after a certain number of years and if their conduct has been good—marry and live a "self-supporting" life in one of the numerous villages.

On such marriage occurred on June 6th 1911. The union, however, did not last long for in November of the same year the husband was sent to hospital for syphilis, and the woman was returned to the Female Jail for safe custody. She was admitted on November 10th, and stated that she was at that time about 3 months pregnant.

This information she vouchsafed to several of the jail convicts and convict officials and in consequence succeeded in evading all hard tasks.

Owing to my absence on leave at the time she escaped the usual medical examination, but was seen by the Sub Asst Surgeon. During the ensuing months however (from information subsequently elicited), her pregnancy seemed to progress normally as regards personal appearance and symptoms.

On May 10th, 1912, I had occasion to see the woman, and noticed her condition. On hearing that she was 8-9 months pregnant, I made an abdominal examination, and was struck by the fact that, though the abdomen appeared to be of a size and shape suitable to the supposed duration of the pregnancy, palpation showed no definite signs of enlargement of the uterus and neither uterine nor foetal sounds could be heard. There was, however, such marked flatulence that I decided to examine her again at my next visit, after administering suitable remedies for the condition.

Before I could do so, however, the following events took place—

On the evening of the 12th, the woman retired to rest apparently quite well, and nothing was noticed by the convict "daffadums" on watch until the early morning, when the woman was seen to be sitting up in bed, and stated that she had had labour pains since about 4 A.M.

She was therefore helped to the hospital, and admitted to the labour ward about 5 A.M. The Sub Asst Surgeon and Matron were at once sent for, but before either of them could arrive, and at a moment when (as it happened) only a female ward coohee was in the room the woman gave birth to the foetus to be subsequently described. According to the ward coohee's statement, the head presented at the vaginal orifice first then the "hands" were born and then the rest came away bent up "like a ball of flesh."

The ward coohee thereupon went for assistance, and at that moment the Sub Asst Surgeon arrived (i.e., about 5.30 A.M.). He at once recognised that the foetus was to all intents and purposes a puppy, and, finding that it was not attached to the mother, enquired if the placenta had come away. Hearing that it had not, he waited a little and then (as there was no sign of bleeding) took the foetus to the Matron and sent me a message informing me of the abnormal birth. When he left the ward there was no discharge of any kind from the vagina, nor was the bed soiled. On his return he found the abdomen flat and flaccid and could not feel the uterus.

I examined the woman about 10 A.M., and found the abdomen as stated above. There was no pain on pressure, and the uterus could not be palpated. There was no discharge from the vagina, and no placenta had come away. The breasts showed no signs of lactation.

Vaginal examination showed the mucous membrane to be of the pinkish colour normal for the non-pregnant state, and the uterus was also of a normal non-pregnant shape, not more than 3 inches long. It was retroverted. The external os admitted one finger up, but the internal os was tightly closed, and resisted very firm pressure. There was no sanguineous discharge. I ordered diapers to be put on and carefully preserved. These showed a slight discolouration for 3 days, but this could be accounted for by the somewhat severe attempt to force the cervix open.

The foetus exactly resembled a new born puppy, which had had the whole of its skin—with the exception of its four paws, ears, and nose—carefully removed. It was about 6 inches long and not decomposed. The abdomen had been ruptured and the intestines were protruding. Only the stump of its tail was remaining, there was no umbilical cord. The head was slightly damaged and blood stained.

The above case suggests 3 solutions, and I leave it to your readers to decide upon the particular one they prefer.

1 That the woman was pregnant by a man, and that the result was the monster shown.

2 That she was pregnant by a dog, and that the result was the monster shown.

3 That she had been pregnant, had procured an abortion, and substituted the puppy foetus for her own.

4 That she was not pregnant, but did the whole thing out of a desire to secure an easy time for herself and give the authorities trouble.

5 Hysteria, pure and simple.

None of these theories can be fully explained, the woman herself states that she believed she was pregnant by her husband, and can give no explanation of the untoward result.

Perhaps some of your readers can cite instances similar to theories 1 and 2. Personally I have never read of any authenticated case. The possibility of hysteria cannot be dismissed but is contra-indicated by her general demeanour and the lack of any exciting cause. Also, it is doubtful if any hysteria in an Indian woman would take the form of introducing a carefully prepared puppy into her vagina to complete the illusion of pregnancy.

As regards 3, the symptoms in favour of pregnancy are more than counterbalanced by those against. There are several professional abortionists in the jail so that there would be no difficulty from that point of view. Nor would it be difficult to procure a new born puppy, the jail is bounded on two sides by the sea and dogs are constantly entering the jail at low tide and seeking suitable homes for their offspring under the wooden barracks. Also it is not uncommon for a dead puppy to be washed up by the incoming tide.

If the woman was pregnant as she stated, by her husband there appears to be no reason for procuring an abortion. If by another man there might be some reason for desiring an abortion, but not for substituting a puppy for the foetus.

On the whole, theory 4 seems the most likely, and the woman was certainly successful in securing 6 months light labour for herself.

The importance of the case lies in its legal aspect. Should she be treated medically for hysteria, or be tried for a criminal offence? The difference to the woman is very marked. §377, I.P.C., lays down a punishment of transportation for life or 10 years with or without fine for unnatural offence. §315, I.P.C., gives 10 years with or without fine for criminal abortion. The Andaman and Nicobar Manual allows a maximum punishment of 2 years "Refractory dress" and "Haircopping," if the case is treated as a jail offence. But if it is all due to hysteria "medical observation" is the worst that could happen to her.

The case has by this time been dealt with, but it may interest others to come to a conclusion for themselves, not would the writer be averse to hearing the result of their cogitations.

I remain,

Yours etc.,

PORT BLAIR, }
3rd July, 1912 }

I. A. BARKER, CAPT. I.M.S.,
Med. Supdt., Jails & Civil Surgeon

"A CHANGE OF TITLE"

To The Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR,—I shall be obliged if you will please note that on July 1st the title of the Sleeping Sickness Bureau was changed to the Tropical Diseases Bureau and the offices were moved to the Imperial Institute. All communications and exchanges of publications intended for the Bureau should now therefore be addressed to—

The Director
Tropical Diseases Bureau
Imperial Institute
London, S.W.

In October next the Sleeping Sickness and Kala Azar Bulletins which are sent to you in exchange for the *Indian Medical Gazette* will give place to the *Tropical Diseases Bulletin*, in which will be published summaries of all the current literature of Tropical and Sub-tropical diseases. A quarterly Tropical Veterinary Bulletin also will be issued by the Bureau.

Yours faithfully,
A. G. BAGSHAW, Esq.
Director

THERAPEUTIC NOTES

TANNALBIN IN THE GERMAN ARMY

SPECIAL recognition has lately been bestowed on the diuretic specific—Tannalbin. According to the statement of the German Military Medical Journal (No. 8, 1912), the War Office has directed that a stock of tablets of the original preparation *Tannalbin Knoll* should always be kept at the sanitary depots of the German army.

This remarkable distinction conferred by an authority accustomed to critical examination, and compelled to adopt extreme economy in the ordering of drugs, shows that the standpoint of the commission for the German Pharmacopoeia (5th Edition) has been followed, who specially indicate that only the original preparation of Tannalbin should be employed, in contrast to the usual custom.

THE MEDICAL SUPPLY ASSOCIATION

THE Medical Supply Association write that, owing to the great increase in their business they have had to build very much larger premises for themselves at 167 to 173, Gray's Inn Road, London. They are always glad to receive visits from members of the Indian Medical Profession visiting England and to give a public demonstration of the advances made in apparatus. The reputation of the Medical Supply Association is well known both for reliability and moderation in price. Besides the general medical supplies for which they are well known, the company desire it to be known that they specialise in Electrical Work in X-Ray Apparatus, etc.

'TABLOID' HYPODERMIC 'ERGAMINE' 0.001 gm

THE latest addition to the list of 'Tabloid' Hypodermic products issued by Messrs Broughtons, Wellcome & Co., is 'Tabloid' Hypodermic 'Ergamine' 0.001 gm. 'Ergamine' is a recently isolated active principle of ergot, with a marked action on the uterus. The most important pharmacological action of 'Ergamine' is as a stimulant of plain muscle, this action being particularly conspicuous in the case of the uterus, which responds to mere traces of this potent substance. Therapeutically 'Ergamine' is indicated when prompt contraction of the uterus is desired as in cases of post-partum hemorrhage. It is introduced for clinical trial and the dose suggested is one milligramme repeated with great caution.

'TABLOID' OPHTHALMIC PHYSOSTIGMINF SALICYLATE, GR 1/4000

'TABLOID' OPHTHALMIC PILOCARPINE NITRATE, GR 1/3000

TWO new 'Tabloid' Ophthalmic products have been added to their list by Messrs Broughtons, Wellcome & Co. These are

'Tabloid' Ophthalmic Physostigmine Salicylate, gr 1/4000, and 'Tabloid' Ophthalmic Pilocarpine Nitrate, gr 1/3000. They are intended for direct application to the eye without previous solution, and are suitable for use by patients themselves in place of eye drops, having the advantage over the latter of ensuring accurate doses. One of the physostigmine salicylate products is approximately equivalent to one drop of a solution of gr 1 to the ounce, and one of the pilocarpine nitrate products to one drop of a gr 1 to the ounce solution. These 'Tabloid' Ophthalmic products are particularly valuable for use of the drugs over long periods. Both are issued in tubes of 25.

Service Notes

THE annual Indian Medical Service dinner was held at the Hotel Cecil London, on Thursday, 13th June 1912. Surgeon General J. P. Greeny, late of Bombay in the Chair. The guests of the evening were Sir Richmond Ritchie, K.C.B., Permanent Under Secretary of State for India; Sir Thomas Barlow, Bart., President of the Royal College of Physicians; Sir Henry Morris, Bart., President of the Royal Society of Medicine, and the Editors of the *Lancet* and of the *British Medical Journal*. After the Chairman had proposed the health of the King, Surgeon General Cleghorn proposed that of Lt. Colonel P. J. Freyer, Secretary of the I.M.S. Dinner Club, who organises the annual dinner, and those present drank the health with musical honours.

The following was a list of the I.M.S. Officers present—

Surgeon Generals—Sir A. M. Branfoot, K.C.B., W. R. Browne, I.F., J. Cleghorn, C.S.I., J. P. Greeny, C.W.R. Hay, Sir L. D. Spence, K.C.B.

Colonels—C. W. Carr Galt, C.B., W. E. Cates, D. French, Mullen, D. E. Hughes, M. D. Montagu, A. Porter, P. A. Weir.

Lieutenant Colonels—W. Alpin, J. Anderson, A. W. T. Buist, Sir R. Haycock, Chables, K.C.B., D. G. Crawford, T. E. Dyson, P. J. Freyer, W. Gray, P. de H. Haig, C. T. Hudson, D. I. Keegan, J. Lloyd Jones, D. P. Macdonald, R. C. Maewatt, H. McCulman, J. Moorhead, T. R. Mulhoney, C. W. Owen, C.R.C.M.S., T. H. Popo, K. Prasad, W. H. Thornhill, D. Warkler, H. R. Woolliet.

Majors—H. Amworth, H. I. K. Bamfield, R. Byss, S. H. Bennett, R. Beard, J. H. Hugo, J. C. H. Leicester, R. H. Price, R. F. Standage, A. E. Walter.

Captains—C. Brodribb, C. A. Gill, W. Gillitt, W. G. Hamilton, D. Heron, J. H. Horton, D.S.O., R. McCarrison, J. McPherson, A. E. H. Pugh.

SURGEON GENERAL WILLIAM JUDSON VAN SOMERIN, Madras Medical Service, retired, died on 20th May 1912. He was born on 21st March 1821, educated at Edinburgh, where he took the L.R.C.S. in 1844 and the M.D. in 1845, and entered the I.M.S. as Asst. Surgeon on 7th April 1846. He became Surgeon on 1st March 1873, with nearly seventeen years' service, Surgeon Major on 7th April 1866, and Deputy Surgeon General on 28th March 1875, and retired on 3rd April 1880. He was the author of two pamphlets, *A Lecture on Public Health and Homes and Habits*. The Army List assigns him no war service.

DR. VAN SOMERIN stood second in seniority on the list of retired officers of the Madras Medical Service, Surgeon Major Alexander Charles Macleod, who was five years his senior, having entered on 6th March 1841, still survives, and is the only man remaining whose first commission dates back to the forties. There are still, however, eighteen survivors who entered in the fifties, of whom the senior is Surgeon General Sir Colvin Colvin Smith, K.C.B.

DEPUTY SURGEON GENERAL WILLIAM WATSON, Bengal Medical Service, retired, died at Coistorphine, near Edinburgh, on 16th June 1912. He was born on 19th March 1832. Educated at Marischal College, Aberdeen, where he took the M.A. in 1850, and the M.B. in 1853, and later the M.D. of Aberdeen in 1870, and entered the I.M.S. as Surgeon on 1st August 1854. He became Surgeon on 1st August 1866, Surgeon Major on 1st July 1873, Brigade Surgeon when that rank was first instituted, on 27th November 1879, and retired on 21st December 1883, with a stop of honorary rank. Most of his service was spent in civil employ in the N.W.P. and Oudh, where he was a Deputy Sanitary Commissioner, but he acted for six months, before his retirement, as A.M.O. in the Central Provinces. He was the author of a *Flora of Kumaon*, privately printed. In the Mutiny he was present at the action at Sasra Ghat, near Agra, on 5th July 1857, where he

was wounded in the head, and also served with Brigadier Shower's column in the Gungron district, in November 1857. At Sasra he distinguished himself by carrying a wounded European soldier out of action.

With reference to Army Regulations, India, Volume V, II, page 9 as amended by India Army Circular No. 10 of 1902, regarding the pattern of collar on the white drill mess jacket, the stand up collar has been adopted for the Indian Medical Service, with the exception of Surgeons General. The latter wear the roll collar under the provisions of G.O.C. No. 901 of 1902.

This will be embodied in the revise of Army Regulations, India, Volume VII, now in hand.

MAJOR A. M. FIRMING, M.B., C.W.I.M.S., Civil Surgeon, has been granted, by His Majesty's Secretary of State for India, leave for four months and twenty-eight days for purposes of study in extension of the combined leave granted him by Order No. 2042, dated the 14th November 1911.

Privileged leave for one month and one day, under Article 260 of the Civil Service Regulations, is granted to Major N. R. J. Ramier, M.R.C.S., D.I.B., I.M.S., Civil Surgeon, Sargol, with effect from the 21st July 1912, on the subsequent date on which he may avail himself of it.

Under the provisions of Articles 260, 308(b) and 233 of the Civil Service Regulations, privileged leave for seventeen days combined with furlough for one year, five months and twenty-one days is granted to Major M. Dick, I.M.S., Civil Surgeon, Meiktila, with effect from the 5th August 1912, on the date subsequent thereto on which he may avail himself of the privileged leave.

MAJOR A. E. WALTER, Indian Medical Service, Superintendent of the X-ray Institute, Delhi, is granted combined leave out of India, with effect from the 16th March 1912, viz., privileged leave for three months, with study leave for four months and twenty-two days, and furlough for four months and nine days in continuation.

The following transfer is made with effect from the date specified—

Major M. Conry, I.M.S., Civil Surgeon, Multan, is appointed Civil Surgeon, Professor of Forensic Medicine and Toxicology, Medical College, and Medical Officer, Government College, Lahore, from 14th June 1912 (afternoon) relieving Major E. S. Peek, I.M.S., proceeded on leave.

INDIAN MEDICAL SERVICE

The following promotions are made, subject to His Majesty's approval—

Captains to be Majors

29th July 1912

Charles William Francis Melville, M.B., F.R.C.S.

Robert McCarrison, M.D.

James Marson, M.B., F.R.C.S.

William Maurice Anderson, M.D.

William Hugh Leonard

Andrew Watson Cook Young, M.I.

James Graham Goodenough Swan, M.I.

Robert Basil Boothby Foster, M.B.

BARU TUNSI DAS KAR, M.A., is appointed to be Professor of Physics at the Medical College, Calcutta, with effect from the 24th June 1912.

The services of Captain H. M. Browne, I.M.S., Officiating Deputy Sanitary Commissioner, Bengal, are replaced at the disposal of the Government of India in the Education Department.

The services of Colonel J. Smyth, M.D., I.M.S. are placed temporarily at the disposal of the Government of Madras.

The services of Lieutenant Colonel R. Robertson, M.B., I.M.S., are placed temporarily at the disposal of His Excellency the Commander in Chief in India.

CAPTAIN V. B. NESEFIELD, I.M.S., Officiating, Civil Surgeon of Pignori, has been granted special leave, on urgent private affairs, for two months, from the 1st August 1912.

MAJOR J. C. S. OATLY, M.R.C.S., F.R.C.I., I.M.S., Civil Surgeon, has been granted, by His Majesty's Secretary of State for India, furlough for six weeks in extension of the combined leave granted him by Order No. 2301, dated the 11th October 1910.

CAPTAIN W J COLLINSON, I M S, whose services have been temporarily placed at the disposal of the U P Government by the Government of India, to be employed on plague duty in the Meerut district, *vice* Captain E Bisset I M S

CAPTAIN J S O'NEILL I M S, on plague duty, Ghazipur, to hold charge of the office of the officer on plague duty, Azamgarh, in addition to his other duties, *vice* Captain T D Murison, I M S, on leave

Lieutenant to be Captain

Richard Edward Flowerdew, M B, dated 26th March 1912

NOTE—The promotion of Major Archibald Nicol Fleming, M B, F R C S E, to that rank is antedated from the 29th July 1908, as notified in the London Gazette of the 26th October 1908, to the 29th January 1908

MAJOR N R J RAINIER, M R C S, D P H, I M S, Civil Surgeon, Second Class is appointed to officiate as Civil Surgeon, First Class, with effect from the 2nd April 1912, *vice* Major P F Chapman, I M S, Civil Surgeon, First Class, on combined leave

MAJOR R H MADDOX, I M S, Civil Surgeon of Gaya, is appointed to be a Civil Surgeon of the First Class, with effect from the 8th April 1912

MAJOR G HUTCHISON, I M S, Civil Surgeon Aligarh, privilege leave for one month, with effect from the date of relief

CAPTAIN T H GLOSTER, M B, I M S, is placed on special duty under the orders of the Director General, Indian Medical Service

THE services of Captain A N Dickson, M B, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India

MAJOR C H BENSLEY M R C S, L P C P, I M S, Officiating Superintendent, Central Jail Nagpur, is confirmed as Superintendent, Central Jail, Jabalpur, with effect from the 20th June 1911, *vice* Major G Y C Hunter, I M S, transferred to Bengal

MAJOR A LEVENTON, I M S, Civil Surgeon, Lakhimpur, is appointed to officiate as Civil Surgeon, First Class with effect from the 1st April 1912, *vice* Major E O MacLeod, I M S, on leave

MAJOR H INNES, I M S, Civil Surgeon, Khair and Jaintia Hills, is appointed to officiate as Civil Surgeon, First Class, with effect from the 9th June 1912, *vice* Lieutenant Colonel E R W O Carroll, I M S, on leave

It is hereby notified that under section 5 of the Lepers Act, III of 1898 the Governor in Council is pleased to appoint Lieutenant Colonel B H Deane I M S, to be a member of the Board of Management of the Albert Victor Asylum for Lepers at Gobai, *vice* Lieutenant Colonel J T Calvert, I M S, resigned

CAPTAIN A CAMERON, I M S, Officiating Civil Surgeon, on return from deputation at Kasauli, to officiate as Superintendent of Central Prison, Benares, *vice* Captain C E Palmer, I M S, granted leave

CAPTAIN C F PALMER, I M S, Officiating Superintendent of Central Prison, Benares, privilege leave for three months from the 10th August 1912

THE services of Major A W R Cochrane, I M S, Superintendent of the Lunatic Asylum, Agri, were on return from leave, placed at the disposal of the Memorial Fund Committee, with effect from the 17th April 1912, for employment as Superintendent of the King Edward VII Memorial sanatorium for Consumptives at Bhowrah

THE following promotions are made, subject to His Majesty's approval—

Captains to be Majors
28th June 1912

William Lapsley, M B
Alfred Spitteler, M B
George Joseph Grafton Young, M B
James Good, M B
William Gavin Hamilton

Lieutenant to be Captain

30th January 1912

Harold Holmes King, M B

MAJOR E S PECK, I M S, Civil Surgeon Lahore, is granted privilege leave for 22 days combined with furlough on medical certificate out of India for 1 year 4 months and 25 days, with effect from the 10th of June 1912, or subsequent date under Articles 260, 233 and 311 of the Civil Service Regulations

LIEUTENANT COLONEL W J BUCHANAN, I M S, Inspector General of Prisons, Bengal, is allowed leave under Article 260 of the Civil Service Regulations, with effect from the 26th July 1912, or any subsequent date on which he may avail himself of it, up to the 13th October 1912

MAJOR J MURRAY, I M S, Officiating Superintendent New Central Jail at Kalighat, is appointed to act as Inspector General of Prisons, Bengal, during the absence on leave of Lieutenant Colonel W J Buchanan, I M S, or until further orders

CAPTAIN C L DUNN, I M S, Deputy Sanitary Commissioner second circle attended the Malabar class at Amritsar from the 15th March to the 26th April 1912

MAJOR M CORRY, I M S, made over charge of the duties of Superintendent of the Multan District Jail to Military Assistant Surgeon H R W Cox, on the forenoon of the 15th June 1912

THE services of Captain W J Collinson M B, I M S are placed temporarily at the disposal of the Government of the United Provinces for employment on plague duty

MAJOR H J WAITON I M S, Civil Surgeon, Saharanpur, is deputed to Kasauli for training in clinical bacteriology and technique

THE services of Captain A Whitmore, M B, I M S, are placed permanently at the disposal of the Government of Burma, with effect from the 12th January 1912

MAJOR HUBERT MALINS EARLE Indian Medical Service, Bengal has been permitted by the Most Hon'ble the Secretary of State for India to return from the service, subject to His Majesty's approval, with effect from the 27th July 1912

CAPTAIN N N G C McVEAN, Indian Medical Service an Officiating Agency Surgeon of the Second Class is granted privilege leave for two months and two days, combined with furlough for five months and twenty nine days with effect from the 12th June 1912, under Article 233 and Note 2 to Article 606 of the Civil Service Regulations

CAPTAIN J W LITTLE, Indian Medical Service, an Agency Surgeon of the Second Class, is posted, on return from leave, as Agency Surgeon, Miskat, with effect from the 12th June 1912

WITH reference to the promotion to the present rank of Major Ernest Reinhold Rost, published in Army Department Notification No 71, dated the 31st January 1908, is antedated from the 29th January 1908 to the 29th July 1907

WITH effect from the 3rd May 1912, the date on which the services of Captain A W Gleig, I M S, were replaced at the disposal of the Government of India Captain P K Tarapore I M S, Officiating Superintendent of the Mandalay Central Jail, is appointed to be Superintendent, *sub pro tem*

CAPTAIN H B SLEEN I M S, Officiating First Resident Surgeon, Presidency General Hospital, is appointed *sub pro tem* in that appointment, with effect from the 1st April 1912

CAPTAIN A D WHITE, I M S, Officiating Second Resident Surgeon, Presidency General Hospital, is appointed *sub pro tem* in that appointment, with effect from the 1st April 1912

MAJOR C M MATHFW, I M S, Medical Officer 92nd Punjab, is appointed to officiate as Medical Storekeeper to Government, Calcutta, *vice* Major W D Hayward, M B, I M S, appointed to act as Medical Storekeeper to Government, Madras, during the absence of Major W G Richards, M B, I M S, granted leave, with effect from the 25th March 1912

CAPTAIN A F HAMILTON, M P, I M S, and Major G E Stewart M B, I M S, respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner, Central Registration District, on 17th June 1912, after office hours

MAJOR THOMAS JACKSON, I.M.S., and Major C C Minison I.M.S., respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner, Gujarat Registration District, on 18th June 1912, after office hours

CAPTAIN G F I HARKNESS, I.M.S., was appointed to act as Civil Surgeon Dhruva with attached duties, from the 2nd May to the 6th June 1912, *vice* Major R W Anthony, I.M.S., deputed to attend the class in Clinical Bacteriology at Kasauli

ON relief by Major Anthony, Captain Harkness has been appointed to act as Civil Surgeon Dhruva with effect from the 17th June 1912, *vice* Captain J Smalley, I.M.S., granted leave

UNDER section 6 of the Poisons Act, 1894, the Chief Commissioner is pleased to appoint Captain T C Rutherford, M.D., M.B., B.S., M.R.C.S. L.R.C.P., I.M.S., Civil Surgeon Bilaspur to the executive and medical charge of the Bilaspur District Jail

MAJOR J C S OLFY, M.R.C.S., L.R.C.P., I.M.S., Civil Surgeon who was granted combined leave by Order No 2361, dated the 6th October 1910, has been granted by His Majesty's Secretary of State for India study leave from the 4th to the 17th April and from the 22nd to the 25th April 1912

ON return from the privilege leave granted him by Order No 1091, dated the 5th June 1912, Captain T C Rutherford, M.D., M.B., B.S., M.R.C.S., L.R.C.P., I.M.S., Civil Surgeon, is reposted to Bilaspur

CAPTAIN H S HUTCHISON, M.B. I.M.S. was placed on general duty at the Civil Hospital, Kaiachi from the 26th October to the 14th December 1911 and from the 23rd December 1911 to the 19th January 1912

ASSISTANT SURGEONS P A CORDFIRO, L.M. & S., and Aideshir Manekji Dotiwala I.M. & S. are promoted from the Second to the First Class of Assistant Surgeons, with effect from the 1st April and 25th May 1912, respectively

ASSISTANT SURGEONS G R D SOUZA FILINTO I.M. & S., and Prabhashankar Trikamji Kothari, L.M. & S. are promoted from the Third to the Second Class of Assistant Surgeons, with effect from the 10th and 14th May 1912 respectively

CAPTAIN F N WHITE, M.D., I.M.S. is appointed to hold charge of the current duties of the office of the Director, Bombay Bacteriological Laboratory, in addition to his own special duties with effect from the date on which he assumes charge of those duties

THE services of Major G Budie, M.B., F.R.C.S.F., I.M.S., are replaced at the disposal of His Excellency the Commander in Chief in India, with effect from the 7th May 1912

MAJOR H R BROWN, I.M.S., and Captain C S Oxley, I.M.S., have passed the examination for the Diploma in Tropical Medicine of the Royal College of Physicians, London

MAJOR L P STEPHEN, I.M.S. has passed the Fellowship of Royal College of Surgeons, Edinburgh

THE services of Captain C A Godson, I.M.S., have been transferred from Assam to Bengal

LIEUTENANT COLONEL J G JORDAN, I.M.S., Civil Surgeon, Monghyr, was granted six weeks leave

LIEUTENANT COLONEL E H WRIGHT, I.M.S., returned from privilege leave on 5th July

LIEUTENANT COLONEL F C PEREIRA, I.M.S., was granted one month's privilege leave in June

LIEUTENANT COLONEL G G GIFFORD I.M.S. was on special duty in June to consult with the Principals and Professors of the Medical Colleges in Bombay and Calcutta

MAJOR C B HARRISON, I.M.S., is due out from furlough on 5th September

MAJOR R BRAYSON, I.M.S., is due out from two years' leave on 7th October

MAJOR H KIRKPATRICK was granted one month's privilege leave in June

MAJOR D C KEMP, I.M.S., is due out from 15 months' leave in December

MAJOR W C LONG, I.M.S., is due out from one year's leave in end of October

CAPTAIN S A RUZZAK, I.M.S., was granted one year's leave in June

CAPTAIN D G RAI, I.M.S. has been transferred to Nellore

CAPTAIN J FORREST, I.M.S., was granted 14 days' privilege leave in July

CAPTAIN F C ROGERS, I.M.S., is due out from furlough in December 1912

CAPTAIN J KIRKWOOD, I.M.S., on return from privilege leave was transferred to Canada

CAPTAIN J H HORNBY, I.M.S., has been on deputation to the Malabar class at Amritsar

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITORS *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta

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BOOKS, REPORTS, &c, RECEIVED —

Dispensary Returns of the Province of Eastern Bengal and Assam, 1911
 Annual Report of the Punjab Lunatic Asylum 1909 to 1911
 Report on the Maritime Trade of Bengal, 1911 1912
 Report on the Working of the Micro Biological Section of the King Institute of Preventive Medicine Madras
 Triennial Report of the Lunatic Asylums in Bengal, 1909 to 1911
 Triennial Report of the Lunatic Asylums in Eastern Bengal and Assam, 1909 11
 Report of the Sanitary Administration of Burma 1911
 Report of the Bacteriology Laboratory Bombay 1911
 Records of the Indian Museum Vol VII, Part III, July 1912
 The Operation of Conchling A Review of 550 cases by Lt Col R H Elliot I.M.S. Read before the Southern Branch of the British Medical Association
 Plague Driving in the Pegu Division, 1909 10, 1910 11, 1911 12 By Capt W F Brayne I.M.S.
 A Practical Text book of the Diseases of Women By A H N Jewers M.D. I.M.S. Seventh Edition H K Lewis London 1912
 Symptoms and their Interpretation By I Mackenzie M.D. Second Edition Messrs Shaw & Sons, London 1912
 Eleventh Annual Report of the Pasteur Institute Kasauli 1911
 The Quarterly Journal of Medicine, July 1912
 Report of the Sanitary Administration of the Punjab, 1911
 Report of the Hospitals and Dispensaries in Burma, 1911
 Report of the Lunatic Asylums under the Government of Bombay
 Report of the National Association for Supplying Female Medical Aid to the Women of India, 1911
 Report on the Preventable Cancer a Statistical Research By Rollo Russell Messrs Longmans Green & Co, 1912

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Major E O Thurston I.M.S., Budwan, Mr I G Leigh, Editor "*The Indian and Eastern Engineer*" Asst Surgn Dalap Singh Sidkot Punjab Dr B P Shirdas Bombay Capt H Stott I.M.S., Mandalay, Dr H F Lechmere Taylor Jalalpur, Punjab Colonel R H Firth R.A.M.C., Punjab Messrs Parke Davies & Co London Lt-Col S Browning Smith I.M.S., Punjab Major J F Gordon Tucker I.M.S., Bombay Capt F A Baker I.M.S., Port Blair Lt Col D G Crawford, I.M.S. London Lt Col R H Elliot I.M.S., Madras Messrs Burroughs Wellcome & Co London Capt Evans I.M.S., 74th Pun Jalis Lucknow Messrs Saunders & Co London Sub Asst Surgeon Sankari Ganguli, F B S Ry Major F E Waters I.M.S. Hooghly Messrs J Merck Germany Messrs Newton Chambers & Co Thorncliffe England The Editor, Tropical Diseases Bureau London Capt L Bodley Scott I.M.S. Sylhet Dr T H Bishop Lower Ganges Bridge, Major A Fenton, I.M.S., Rangoon Asst Surgn A Bayley do Castro Burma, and Sub Asst Surgn I O Sircar, Rampur Roalia

Original Articles

AN INVESTIGATION INTO THE TREATMENT OF SNAKE-BITE BY PERMANGANATE OF POTASSIUM

By W. B. BANNERMAN,

SURGEON GENERAL, I. M. S.,

OFFICIALLY COMMUNICATED BY

SIR C. P. LUKIS, M.D., I.R.C.S., R.C.S.I.,

SURGEON GENERAL, I. M. S.

Director General, Indian Medical Service

[The following is a brief resume of a report submitted by the Hon'ble Surgeon General W. B. Bannerman, of an investigation into the treatment of snake bite by permanganate of potassium. The investigation was taken up in consequence of representations made by Sir T. Lauder Brunton to the Government of India.]

THE treatment of snake-bite by potassium permanganate was first used by Sir Joseph Fayrer, I. M. S., in 1869, who found that the drug "did not seem to have any power to avert the lethal action of the poison." Wynter Blyth showed that when mixed *in vitro* with permanganate of potassium, Cobra venom became innocuous. In 1881 Couty and Lacerda performed certain experiments, showing that the lethal action of serpent's venom was destroyed when a 1 per cent solution of the drug was injected into the tissues close to the place of bite. In 1902 Lauder Brunton introduced the well-known "lancet," in the hope that in this simple method, lay a treatment for snake-bite which would be of great life-saving value. Rogers reported promising results from experiments on various animals. Lamb on the contrary conducted experiments which were not successful. The present investigation was instituted to obtain evidence as to the efficacy of the treatment *in vivo*.

It was decided that in the first series of experiments natural conditions of biting should be imitated as closely as possible. The test dose was that given by the actual bite of the Cobra or Daboia, and it is to be noted that the Cobra, after having bitten, remains attached to his prey for an appreciable time, whilst the Daboia darts with incredible rapidity, and then releases its victim instantly. The latter snake occasionally fails altogether in its strike.

Surgeon-General Bannerman's experiments showed that—

(1) A dog bitten by a Cobra cannot be saved by the local application of powdered potassium permanganate rubbed in after free incision of the bitten place nor by a similar application of a solution of the powder.

(2) That it may be saved by the immediate subcutaneous injection of 10 c.c. of a 5 per cent solution of the drug, but that this solution is so strong as to act as an escharotic.

(3) That if this treatment be delayed for even two minutes it loses its efficacy.

(4) That a dog bitten under natural conditions by a Russell's viper (Daboia) cannot be saved by the drug however applied.

A second series of experiments was carried out in which an attempt was made to inject the drug intravenously. It was, however, found that the intravenous injection of even 40 c.c. of a half per cent solution of potassium permanganate caused death from intravascular clotting, and so this method of medication was abandoned.

Having shown from the above the non-success of permanganate treatment in animals which had received a severe bite, Surgeon-General Bannerman determined to test the efficacy of the treatment under less drastic conditions, and to attain this end the minimum lethal doses of Cobra and Daboia venoms for dogs were determined. These were found to be of Cobra venom, about 0.25 milligrams per kilo and of Daboia venom about 0.75 milligrams per kilo. It was also determined that Cobra venom in solution was neutralised *in vitro* by half its weight of potassium permanganate in solution in five minutes, and that the same proportions held good for Daboia venom. These preliminary data having been ascertained, Surgeon-General Bannerman proceeded to experiments *in vivo*, solutions of the venom and the drug being in certain instances introduced through the same hypodermic needle, left *in situ*, in order to ensure as far as possible that the poison and its antidote came into contact. His experiments showed that "even four times the amount which serves to neutralise Cobra venom in a test tube will not with certainty prevent fatal poisoning in an animal which has received 10 minimum lethal doses, and that the same quantitative relations obtained when Daboia venom was used. He also found that "crystals of potassium permanganate, when rubbed into incisions in a dog's leg, produce extensive ulceration, and (it was shown in later experiments) that, when combined with the local action of Daboia venom, the crystals may cause even necrosis of the small bones." It was then decided to carry out experiments in which the test dose was less than 10 M. L. D.

The following results were obtained —

Venom	Test Dose	Interval between time of giving test dose and treatment	Nature of drug	No. of dogs	No. which died
Cobra	1 M. L. D.	0 min.	Powder	6	2
"	1 M. L. D.	5 "	Do	4	1
"	1 M. L. D.	10 "	Do	8	3
"	1 M. L. D.	30 "	Do	5	2
"	2 M. L. D.	0 "	Do	10	5
"	2 M. L. D.	5 "	Do	6	1
"	3 M. L. D.	0 "	Do	2	1
"	3 M. L. D.	5 "	Do	6	3
"	4 M. L. D.	30 "	Do	4	4
Daboia	2 M. L. D.	0 "	Do	6	3
"	2 M. L. D.	1 "	Do	2	0
"	2 M. L. D.	2 "	Do	2	0
"	2 M. L. D.	4 "	Do	2	2
"	2 M. L. D.	5 "	Do	2	1
"	2 M. L. D.	30 "	Do	4	2

Surgeon-General Bannerman's final conclusions are as follows —

"The conclusions as to the action of potassium permanganate powder on small doses of Cobra venom injected *just under the skin* appear to be that this treatment is of some little use under these highly artificial conditions. It must be remembered, however, that a snake does not deposit its venom under the skin, but striking as it does with its fangs at right angles to the skin, the poison must usually be placed well below the fascia of the part, and therefore further removed from the applications of a chemical antidote."

"With regard to Daboia venom injected just under the skin, the results are very similar to those obtained with the venom of the Cobra, *i.e.*, that under such artificial conditions the treatment by free incision and rubbing with powder of potassium permanganate is of some little use. As a practical measure for employment after actual snake-bite it appears to be of no use whatever."

THE EXTRACTION OF CATARACT IN ITS CAPSULE, BY DIVISION OF THE SUSPENSORY LIGAMENT

BY V B NESFIELD, F.R.C.S.,

CAPT, I.M.S.,

Civil Surgeon, Bijnor U P

In the *Indian Medical Gazettes* of July 1909 and August 1911, I called attention to the readiness by which the lens may be extracted in its capsule, when the suspensory ligament is torn by means of a wire hook introduced into the anterior chamber. *The reason for this modification* is to make the usual operation of Col Smith* both easier and safer, and to give the inexperienced operator greater confidence.

Moreover, by this method, the lens can be readily extracted, without enlarging the pupil, and also when a conjunctival flap is made. Of course, I am open to the obvious criticism, that without sufficient experience, I have ventured to modify a method which has now stood the test of time for many years, and which has been justified by its success in a very large number of cases. My answer is simple. After having done a sufficient number of cataracts by the old method of capsulotomy, I decided to try Col Smith's method. I read all the available literature and disregarded the warning to the effect, that no one can undertake the operation without making a pilgrimage to the Punjab, to see it done with his own eyes.

I could not, however, undertake the journey, and I found, as predicted, that I could not do the

operation in at least 5 cases out of 6, *i.e.*, I had to tear the capsule, for I had learnt by experience that the hyaloid could only stand a certain degree of pressure. Hence, when the lens showed no signs of emerging in response to this pressure, I turned to capsulotomy. And though I do not consider myself an over-nervous surgeon, I confess to have felt a slight feeling of nervousness in every case.

The majority of surgeons still adhere to the old operation, in spite of secondary cataracts. Mr Eason in the *Lancet* of July 29th, 1911, gives 30—50 per cent as the average rate of secondary cataracts. This conservatism is not, I feel sure, due to any disregard of the advance that has been made by science, but is, I feel sure, the result of the same difficulty which drove me back to capsulotomy, namely, the inability to perform the intracapsular operation.

Convinced as I was of the great advantages of removing the lens in its capsule, I began a series of experiments in order to ascertain why the operation proved so difficult in practice, or in other words, why so dangerous an amount of pressure was found to be essential.

I found that it was due to the suspensory ligament of the lens, and that though the ligament could be readily ruptured by external pressure in the case of a firm immature lens, it was extremely difficult to rupture it without also rupturing the hyaloid, in the case of a soft mature lens.

I carried out over 100 experiments on normal eyes with normal lenses on the dead subject, and found the suspensory ligament to be a fairly strong membrane which it was impossible to rupture by external pressure without also bursting the hyaloid.

These experiments further demonstrated that pressure as applied by Col Smith probably ruptures the lower segment of the ligament, because the lens is driven towards the corneal opening as a result of the force applied to its lower sloping border. The pressure on the cornea in front, and the resistance of the vitreous behind, drive the interposed lens towards the opening in much the same manner as a date stone can be shot forward by pressure between the fingers. This explains why the firm lens can be more readily expressed than the soft lens. These terms soft and firm apply to the lens in its capsule. A mature lens usually consists of a very hard nucleus of varying size, surrounded by a milky or semi-solid fluid enclosed in the capsule. The whole forms a soft bladder-like body, unfavourable for expression, because readily indented.

My suggestion is a simple and fairly obvious modification of Col Smith's method. Instead of rupturing the ligament by external pressure, I tear it by means of a wire hook passed into the anterior chamber. This is a very simple

* Pagenstecher, 1865
Mulrooney, 1890, Amritsar

manœuvre, and can be done by any surgeon. The lens, once dislocated, can at once be readily extracted.

I have satisfied myself in five cases of dislocated cataractous lenses, that it is the fixation of the lens by the suspensory ligament, which causes the main trouble and anxiety. In certain cases, especially when the patient strains, and the knife is blunt the lens is dislocated by making the incision. This is probably due to the eye-ball being pulled into an oval shape during the incision, the result being that the upper and lower portions of the ligament are torn.

These are the cases where Col. Smith's operation is so easy.

From January 1st to July 27th of this year I have done 503 cataracts by this method*, and have now learnt Col. Smith's method of rupturing the ligament, but still find it impossible to do the operation in one out of every four cases, when a conjunctival flap is made, and no central iridectomy.

I have no doubt that if I ended the incision in the cornea, I could do the operation more frequently, but as this necessitates an iridectomy to avoid the free edge of the iris being caught in the wound, I think that it is unjustifiable in a country where the glare is so intense.

Finally, it is always possible that strong external pressure, and the consequent irritation of the eye-ball may set up iritis, for iritic pigment is frequently detached, and as the pressure is useless in three out of every four cases I have now altogether given up trying to dislocate the lens by Smith's method.

There are also three minor, though very important points, where I consider a further modification of Col. Smith's technique is useful.

1 The incision should not finish in the cornea, and there should be a conjunctival flap.

2 The free edge of the iris should not be divided, but only the base, thus giving a round small and active pupil.

3 The dressings should be changed every day.

THE RESULTS

A Sight—In all uncomplicated cases, the sight is always extremely good on the 7th day. Many of the patients come again one month later, and I make a rule of testing the sight again. The results are uniformly good, + 10 for distance, and + 12 for close vision, are the glasses which prove most suitable.

B Sepsis—Out of 503 cases, only 2 have shown signs of sepsis, in one the sight was completely lost, in the other some was retained. As a large number of patients suffer from trachoma, the freedom from sepsis is remarkable. There is, of

course, no previous preparation, and it is impossible to keep many of the patients quiet after the operation.

C Secondary cataracts from bursting of the capsule—I have only had occasion to needle a few cases.

D Escape of Vitreous—At first I had more frequent escapes, but my last three lists have been as follows—

61 cases	and then a slight escape
21 cases	do do
105 cases	do do
83 cases	do do

E Prolapse of Iris—There has been no prolapse of the iris in the last 200 cases, in which a basal iridectomy, and a conjunctival flap have been employed.

THE OPERATION

As every Surgeon adopts a somewhat different technique, I will describe each stage of the method I employ.

1 *The antiseptic*—The conjunctival sac is sterilized by frequently dropping 1 in 4,000 perchloride of mercury into the eye, $\frac{1}{4}$ to $\frac{1}{2}$ hour beforehand.*

All mucous ropes are wiped out, and boric lotion is dropped in just before making the incision.

2 *The anæsthetic*—

Cocaine Hydrochloride	grs xv
Adrenalin Chloride	ʒ xx
Pure Carbolic liq	ʒ v
Aqua rd	ʒi

The object of the carbolic is to ensure that the lotion shall remain sterile. Half an ounce is prepared at a time and sterilized. This is used until finished (i.e., for about 20 cases) without again being sterilized. I find that the solution remains sterile and that the carbolic does no harm to the eye, even when allowed to percolate into the anterior chamber.

3 *The eyelid stitch*—I always pass a silk stitch through the skin of the margin of the upper and lower eyelids. On completion of the operation, the stitch is tied. The object of the stitch is twofold—

A—It keeps the eyelids closed under the dressings.

B—It prevents the upper eyelid from getting under the corneal flap. I have not found the latter accident to be a rare event, especially when the eyelid is contracted from old standing trachoma. This unfortunate result is also specially likely to occur when there is a slight escape of vitreous, and some of the semi-solid material protrudes through the wound, pushing forward the sclero-corneal flap.

* And 70 cases last year October—December by my method, 35 by Capsulotomy and 9 Smith's.

* Cocaine is used before the antiseptic.

Last October I operated on a very nervous woman. At the conclusion of the operation, I touched her forehead, she squeezed strongly, and a little vitreous escaped. She then opened and closed her eyes 3 or 4 times and the upper eyelid entered the wound, and turned the corneal flap backwards. I replaced it, and put on the dressings, and repeated this three times during the next few hours, but to no purpose. On opening the dressings the corneal flap was always firmly gripped between the lids.

I have lost three cases in this way. Though I have never seen this mentioned, I feel sure that this accident must have occurred in the experience of other surgeons. Since the case mentioned, I have always sewn up the eyelids.

The only objection to the stitch is that the patient feels some discomfort on passing the needle, as the skin is not anaesthetised.

4 *The speculum and method of holding the orbicularis palpebrarum*—For a speculum, I now use a piece of ordinary tin-foil (e.g., from a biscuit tin) 4" long by $\frac{1}{2}$ " broad. One end is rounded and clipped smooth by scissors, and is bent back on itself, so as to grip the margin of the eyelid.

The assistant* draws up and fixes the eyelid by means of this speculum which he holds in one hand. With the thumb or forefinger of the other hand, the eye-brow is pulled upwards and fixed, according to Col Smith's directions. On making the incision, the speculum is depressed, so as to oppose the margin of the eyelid to the eyeball, without actually pressing the eyeball. This keeps the outer and inner portions of the lid away from the knife.

The lower eyelid is pulled down by another assistant.

5 *The light*—A fairly dark room is used for the operations, and the light from a door or window is projected on to the eye by means of a laryngoscopic mirror, held by the assistant, who also pulls down the lower lid.

6 *The corneal incision*—The knife is entered about the middle of the circumference of the cornea in the milky line where the cornea merges into the sclerotic, and brought out at the corresponding place opposite.

The upper part of the incision passes through the sclero-corneal junction, and is made sloping and valvular, and a conjunctival flap is taken up †.

The reason for a sloping valvular incision—As is well known, if a knife be passed through the cornea nearly horizontally, so as to make a sloping valvular incision, the anterior chamber will remain air blown into it under pressure, because the opening is valvular. But if the incision divides the cornea at right angles, the air instantly escapes. It is in this way that a sloping valvular incision prevents a protrusion

of the iris 12–48 hours after a cataract operation, should the intraocular tension be suddenly increased by the patient sitting up, coughing, sneezing, or straining.

The reason for a conjunctival flap

A The exudate of serum and blood unites the wound in a few minutes, while the union is quite strong in 24 hours.

B As it is the base of the iris which first prolapses, the conjunctival flap covers this, and thus makes a small prolapse quite inoffensive. The only result is that the pupil is elongated slightly upwards. Hence it follows that a conjunctival flap is absolutely necessary when no central iridectomy is done.

Additional reasons for ending the incision in the sclero-corneal junction, and not in the cornea

A Not only is there no scar in the cornea, but also there is no danger of the cut edge of the sclero-cornea tearing the capsule, because the sclerotic is soft.

The cornea being of a horny consistence, presents a hard and sharp knife-like edge, on being divided with a slanting cut. This sharp edge sometimes tears the capsule during the passage of the lens.

B When the incision is in the cornea, the free edge of the iris is liable to be caught in the scar, if no iridectomy is performed. This causes considerable discomfort subsequently.

C No astigmatism is produced.

7 *The passage of the special instrument and division of the suspensory ligament*—On completion of the incision, all fluid and blood is rapidly sponged away, and a drop of cocaine-adrenalin-carbolic solution is dropped into the eye. The eyeball is fixed with the left hand (both eyes) and the patient told to look at the ceiling*. The speculum is depressed, so that the eyelid touches the eyeball, and some pressure is brought to bear on the eyeball, so as to bring the whole lens against the iris. All fluid is again carefully sponged away, and the special instrument is passed on the flat from near the outer canthus at about 10 o'clock, so as to clear the eyebrow. The point of the wire, represented by the bevelled angle of the hook, passes over the iris, until the circumference of the lens is reached. The position of the instrument can be readily noted, as it passes under the iris. When in position, the instrument is rotated, so that the point is turned downwards, and it is first gently made to encut the inner and lower border, and next the outer and lower border of the lens, and then it is removed.

* Compounder Maigub Ahmed

† There is always a good deal of bleeding, but it can usually be prevented from entering the eyeball by sponging.

* The patient lying flat on his back

Sometimes while the lens is in position over the lower border, I pull the lens bodily upwards

There are only two cautions

1 On no account must the shaft of the wire be allowed to press against the lens, otherwise there is a danger of forcing the lens against the hyaloid and rupturing it. I have done this three times, and so have learnt from experience

2 The movement must be steady and gentle, and the surface of the wire must be extremely smooth, as any roughness of the wire brings about a rupture of the capsule. Further on I will describe the method of keeping the instrument smooth

After dislocation, the lens usually comes forward, and presses against the iris

The Iridectomy—The patient is told to look downwards, all fluid is again sponged away, and a small piece of the base of the iris is caught with forceps and snipped off. The eyeball is not fixed

In an uncomplicated case I never now cut the free margin of the iris. The result is that an active and round pupil is left

The reason for leaving a round pupil—The resulting sight and definition is better, and no glare is felt, while also the usual redness of the conjunctiva following an operation clears up much more rapidly

During the operation the intact iris supports the vitreous, but, by obstructing the delivery somewhat, it does on the whole increase the difficulty. The intact iris readily returns into the eye, and usually requires no replacement

The reason for making an aperture in the base of the iris—(A) Prolapse of the iris I find is most frequently, due to a sudden increase of the intraocular tension. This is generally caused by coughing, sneezing, straining or even quarrelling at any time from 12 to 48 hours after the operation. The wound opens, and the rush of fluid forces out the iris. But if there be an aperture at the base of the iris, the fluid escapes through it, and is thus unable to force out the iris

(B) On the 2nd or 3rd day after operation the vitreous sometimes swells, thus increasing the intraocular pressure. The swollen vitreous, moreover, pins the iris against the cornea thus closing the absorption angle. The wound especially if not valvular finally gapes and the iris protrudes in front of the vitreous. If the iris be snipped off a few days later, it is still impossible to close the wound as it is occupied by a protrusion of vitreous. Further snipping opens the hyaloid, and vitreous escapes, and then the edges of the wound can be approximated

A basal iridectomy by opening up the absorption channels at the base of the iris, allows any

excess of fluid to percolate away. This influences the state of the vitreous, though I am unable to give any reason for it

A basal iridectomy thus prevents a prolapse of the iris, and the onset of post-operative glaucoma

When the patient is troublesome, I do no iridectomy

I did no iridectomy in a series of 53 cases, and found prolapse to occur in 5 cases, and glaucoma in two

The extraction of the lens—A spatula is used with the left hand, and a stout piece of silver wire, with the end bent to a right angle, in the right hand. The wire is a simple substitute for Col Smith's strabismus hook, the only practical difference being that it is stouter, and one can make it oneself. The patient usually looks at the ceiling and hence requires no directions

The point of the silver hook is placed on the sclero-corneal junction below, and pressure is directed according to the consistence of the lens. The condition of the lens can be detected before operation, and confirmed when passing the special instrument to divide the ligament. If the lens is firm, gentle pressure is applied backwards and then upwards parallel to the anterior surface of the vitreous, with the object of driving the lower border of the lens upwards and backwards, so that the upper border may come forward and cause the upper part of the iris to bulge

With the spatula above, the sclerotic is pressed backwards and upwards so as to carry the iris over the presenting portion of the lens, till the lens finally clears the iris, and presents through the pupil. As the lens now pushes open the corneal flap and takes up an almost vertical position, it can be readily extracted by gripping it between the spatula above and the hook below (the cornea at the same time intervening) and gradually sliding it up the spatula. Most commonly it is not necessary to touch the lens at all with the spatula. I always employ very gentle and intermittent pressure, stopping at once should the patient roll his eye

Between each application of the pressure, all fluid is sponged away, so as to prevent it from being drawn into the eyeball. The first pressure shows whether the lens has been dislocated, and also directs it in its right course, and probably also tears the lateral portions of the ligament. The second time the pressure is directed almost horizontally, and gives the lens a vertical tilt

The 3rd, 4th and 5th applications of the pressure gradually dilate the pupil

I have never found that any ground is lost by discontinuing the pressure, and applying it again after an interval

When the lens is soft, the pressure below is applied almost directly backwards, and the point

of the hook is then drawn a little downwards' so as to tilt the lower border of the lens forward. The point of the hook can now be placed behind the lower border of the lens, and the lower border gradually tilted forward, till it passes through the pupil. The capsule on the free surface of the lens, *i.e.*, in the area of the pupil, is distended by the fluid which surrounds the hard nucleus, and thus forms a veritable *caput succedaneum* which dilates the pupil.

The lens sometimes emerges in a third position, when about $\frac{1}{2}$ of the upper border has emerged, bulging the iris in front of it, the lower border comes forward and the lens turns over.

It will thus be seen that at no time except perhaps for the 1st mild pressure, is any force applied to the vitreous.

10 *The replacement of the iris*—When the pupil has not been divided, the iris usually returns without any assistance. Should a small portion of the base not return, the only thing necessary is to press the sclerotic above with the spatula, and thus carry the iris inwards. When the pupil has been divided, the cut edges have usually to be replaced by means of a spatula. It is always preferable not to introduce any instrument at this stage, as it is inconvenient to sponge the eye at this juncture.

There is a curious difficulty which sometimes occurs, the corneal flap falls into the anterior chamber, and gets fixed behind the cut edge of the sclerotic. The flap can usually be picked up by iris forceps, but failing this, the cut edge of the sclerotic should be pressed backwards and downwards by means of the spatula.

11 *The stitch* is now tied and *Eserine* introduced—

Eserine	grs 11
Acid Carbolic Liq	7 v
Aqua ad	3i

A single piece of lint soaked in 1 in 4,000 perchloride of mercury is applied, and a light *celluloid eye-shade*. A pad of wool is placed over the shade and also over the other eye, and a double-tailed bandage is applied.

The reason for the eye-shade is to prevent the bandage from pressing on the eyeball. The patient is now given 30 minims of tinct opii in 1 ounce of water, with the object of keeping him quiet and enabling the pupil to contract further.

The after-treatment—The stitch is removed 24 hours later, and boric lotion 10 grs ad 3i dropped into the eye. A perchloride dressing is again applied, but the shade is dispensed with. The eye is dressed daily, and boric lotion instilled for 7 days, when the patient is discharged.

When the patient is suffering from trachoma, $\frac{1}{2}$ gr ad 3i of silver nitrate is instilled daily after washing with boric.

The food for the first 3 days consists of 2 pints of milk only. After that the patient returns to his ordinary diet.

The management of the knife, spatula, and special instrument—The knife is stropped after each operation. I am at present using an old ivory-handled knife which has done 350 cataracts without regrinding. It is sterilized by being dipped in pure carbolic.

The spatula must occasionally be stropped so as to keep its surface well polished. It must also be sterilized in pure carbolic, for if boiled, a deposit of chalk settles on it, and roughens its surface. The capsule is extremely likely to burst when touched by a rough spatula.*

The special instrument for tearing the suspensory ligament consists of a silver wire as stout as a darning needle. It is 4" long and one end is bent at right angles. This bent portion is $\frac{1}{8}$ " long.

The angle is flattened by filing, so as to allow the instrument to be introduced, while the bent end is bevelled. The instrument must be very carefully polished with No. 0 emery paper, and then rubbed on a razor strop, so as to remove all rough points. It should be sterilized by dipping it in pure carbolic. It should be stropped every second or third day.†

I always use my right hand for making the incision, and for passing the special instrument, even in the case of the left eye.

Mydriatic—Atropine is not used. Eserine is used after the operation.

Difficulties and Accidents

(a) *Granular lids*—As long as this disease is quiescent, there is very little danger of sepsis.

(b) *Too small an incision*—If the lens can be pushed back, the incision can be readily enlarged at the corners by iris forceps. If the lens cannot be pushed back, it should be gripped with fixation forceps and pulled out. There is of course a danger of the capsule being left.

(c) *Rupture of the hyaloid and escape of vitreous*—The hyaloid may be ruptured by the special instrument, or during the extraction of the lens.

In either case, a complete iridectomy should be done, and the lens extracted by means of the spatula passed into the eyeball underneath the lens. However small the escape of the vitreous may be before the delivery of the lens, the lens should be extracted with the spatula.

I have on three or four occasions extracted the encapsuled lens by means of the spatula, without producing any escape of vitreous in the case of very nervous patients unable to control their eyes during expression.

* Originally I used an old cystotome which had frequently been boiled so that the point was blunt and smooth.
† I shall be delighted to send anyone this instrument.

(d) *Rupture of the capsule during delivery* — After the lens has been removed, the loose capsule can usually be picked out with iris forceps

(e) Sometimes the wound is sealed by serum and clot a few minutes after the incision. This prevents advance of the lens. The remedy is to lift up the flap with iris forceps

In conclusion — The advantages of tearing the ligament by means of the special instrument are —

1 The use of this instrument is far easier to learn than the method of external pressure for rupturing the ligament

2 It permits the employment of a sclero-corneal incision and conjunctival flap

3 And hence it removes the necessity for performing a central iridectomy, and thus makes it possible to maintain a circular pupil

4 It reduces to a minimum the amount of pressure exerted on the vitreous

5 In cases when the lower portion of the iris is adherent to the capsule, it is invaluable because the adhesions are readily separated by the wire

6 Every cataract, even in the case of young* children and young adults, can be removed in its capsule by this method

Cataracts in young children are readily removed with iris forceps, in adolescents by means of iris forceps or the spatula after the ligament has been torn

Cataract complicated by glaucoma — Glaucomatous cataracts can be readily removed by this method, 2—4 weeks after a preliminary iridectomy, and there is always a distinct improvement of any pre-existing sight

A SPECIAL TYPE OF RECURRENT FEVER DUE TO A SPIROCHÆTA

BY G. V. BROWSE, M.B., B.C. (CANTAB.),

MAJOR, I.M.S.

In the following article I wish to call attention to a disease observed in Quetta which appears to differ in many respects from the classical forms of recurrent fever at present described, and which at the same time has certain characteristics common to each

My observations are very incomplete, but I have made an endeavour to record some facts in support of the following statements —

I The disease is caused by a spirochaeta

II It differs from classical Recurrent Fever in the type of pyrexia, and the blood changes, namely, the slightly marked polymorphonuclear increase and distinct large mononuclear increase,

it resembles classical Recurrent Fever in some of its clinical features

III It differs from African Tick Fever chiefly in the very great contrast in climatic conditions under which it develops. In other respects, such as the type of pyrexia and blood changes, there is a decided resemblance. The period under review covers twelve months, from March 18th 1911 to March 26th, 1912, namely, the date on which the regiment from which all the patients came, marched into Quetta to the date on which I proceeded on furlough. During this period eighteen cases were recognised by finding spirochætae in the peripheral blood

The first case occurred on April 4th, sixteen days after the arrival of the regiment, which up to this time had been free from any type of recurrent fever. The incidence was as follows —

1911.	April	Two cases	1912	January	Four cases
	July	Three "		February	Four "
	Sept	Two "		March	Two "
	October	One "			

The increase in 1912 is possibly due to the easier method of diagnosis due to the examination by the Thick Drop method as there were some six patients during 1911 who had temperature charts very suggestive of the disease, but in whose peripheral blood no spirochætae could be found, using the film method of search

Quetta is situated at an altitude of between five and six thousand feet above sea level, the atmosphere is an unusually dry one. The winter is severe and a night temperature of 20°—30°F below freezing point in December and early in January is not uncommon. The maximum shade temperature in summer would average from 80° to 85°F. The winter of 1911-12 was a particularly mild one and there was a spell of warm weather from January 1st to the 8th. The 12th and 13th, the 19th, 20th and 25th were also warm days with correspondingly mild nights, during which the maximum shade temperature was between 50° & 60°F and the minimum 34° to 38°F. The incidence of fever cases was as follows — January 13th, one case, January 24th, one case, January 30th, two cases, February 2nd, two cases. These seemingly follow the warm spells of weather at intervals of from five to ten days, which would be natural to expect, if the infecting agent is an insect, roused by the warmth from winter hibernation

The disease was practically confined to the regimental followers' quarters. These consist of some sixty rooms in three separate rows built on three sides of, and within a few feet of, the barracks occupied by the fighting-men. These rows of huts are built of sun-dried brick and mud plaster, the walls being honey-combed with holes and crevices, the roofs are composed of grass matting overlaid with a massive coating of mud.

* The true infantile cataract is only a double membrane, this can readily be picked out with iris forceps. The posterior membrane sometimes requires needling

There is almost no light and very little ventilation, with considerable overcrowding throughout. The cases of fever were not confined to any particular portion of these buildings, but occurred in an irregular manner from widely separated rooms. The barracks in close proximity have burnt brick walls and metal roofs, and although considerably overcrowded, have been practically free from infection up to the present (March 1912).

The clinical features of the disease are not very distinctive, and to a modified extent resemble those which occur in Relapsing Fever. It is a mild disease, and in no case were there, at any time, symptoms of a serious or alarming nature. In most, the only symptoms were those common to any febrile condition.

The onset was sudden with a feeling of cold but no actual rigor. Vomiting was the exception and in no case was jaundice or rash noticed. All the patients invariably felt perfectly well directly the fever ceased and much resented being detained in hospital. A few, after late relapses became anæmic and debilitated, otherwise the disease was trivial in its effects. Pains in the limbs and joints were not uncommon, but were only marked in three cases out of the eighteen. Eight patients had enlargement of the spleen on admission, but of these, five were men with chronic splenitis not due to the spirochæta. Pain and tenderness over the spleen and liver during the fever paroxysms was observed in three cases, but was the exception. One man admitted with a very hard and large spleen which, he stated, he had had for many years, completely lost it during the course of the disease. His statement is open to doubt.

The temperature follows a course similar to that of the disease described in Sir Clifford Allbutt's system of medicine under the name of African Tick Fever as it attacks the foreigner to the country, and it is of interest to note that the community under discussion (the regimental followers) come into this category. They are foreigners to Baluchistan and come from districts widely separated from it both in geographical and climatic features. The temperature curves as regards the number of relapses also seem somewhat similar to the Gibraltar case described by Sir Patrick Manson.

Out of sixteen of the cases under discussion the number of febrile paroxysms in each was as follows —

Number of Paroxysms	2	3	4	5	6	7
Number of Cases	Two	Three	Three	Two	Two	Three
				Two	Three	One

The paroxysms usually lasted from 48 to 64 hours at the commencement of the illness, gradually decreasing to fever of sometimes a few hours' duration only towards convalescence.

In no case did the temperature remain constantly elevated for as long as four days, as it does in relapsing fever. The whole type of chart shows great irregularity, both as regards the apyrexial periods which vary from two to ten days' duration, and as regards the actual fever paroxysms which varied in severity in each patient from time to time.

The attached charts give a clear idea of this irregularity. With regard to the changes in the blood, Table A gives in a concise form my observations in ten cases, the leucocytes are noted in percentages, the presence or absence of spirochæta is also indicated, a blank indicating that no examination was made. All the relative counts were made according to the scheme suggested in Rogers' Fevers in the Tropics. Namely five hundred leucocytes were enumerated under a $\frac{1}{8}$ " objective commencing at one end of the smear and working from side to side up to the other end so as to include all parts of the specimen.

No leucocyte that was not as large or larger than the polymorphonuclears was counted as a large mononuclear, so that many observers would consider these cells much under estimated, however the enumeration is consistent all through, each specimen having been counted by myself. Mast cells were often seen but not counted.

On reference to Table A it will be seen that there is an undoubted tendency in most cases towards a polymorphonuclear increase, totally and relatively, during the febrile stages, but it is by no means constant or marked. Rogers (Fevers in the Tropics) and Daniel (Laboratory Studies in Tropical Medicine) both state that in relapsing fever the marked polymorphonuclear leucocytosis during the pyrexia is important in the diagnosis of this disease from malaria and typhoid. In this respect the disease under discussion appears to differ from relapsing fever and owing to the small increase in these cells the relative count would be of no value in differentiating it from malaria or typhoid.

With regard to the large mononuclear changes, the antecedent malarial history is of much importance. There is probably no native of India who is free from the *Plasmodium Malariae* or its effects.

After careful scrutiny of the hospital records I have come to the conclusion that the cases under discussion have no special tendency to malaria. Of the two combatants who developed the disease and of whom a detailed medical history is available, one had no admission for malaria during fourteen years' service, he had as severe an attack as any, with four relapses.

The other was a malarial subject under treatment for splenitis at the time he developed the spirochætal infection, he had one attack of fever only. Out of fourteen followers with the

A SPECIAL TYPE OF RECURRENT FEVER DUE TO A SPIROCHÆTA

By MAJOR G V BROWSE, M.B., B.C. (CANTAB.), F.R.S.

CHART I

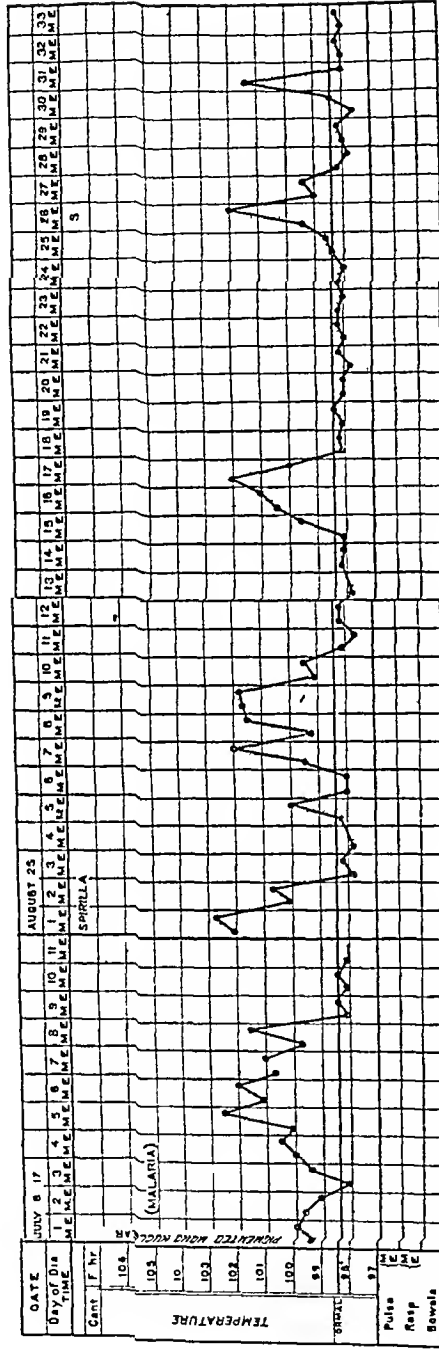


CHART II

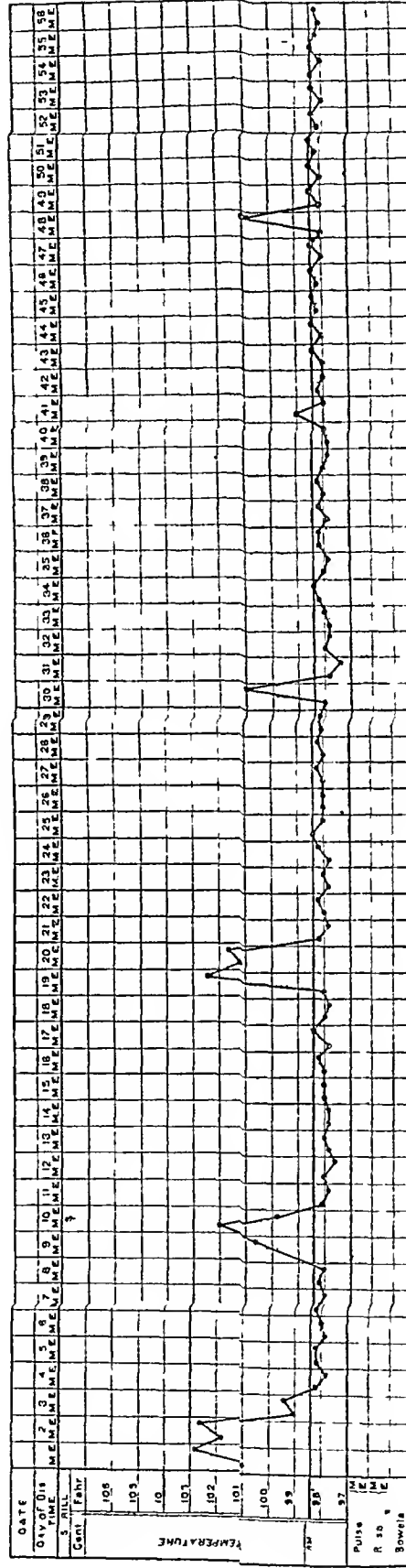
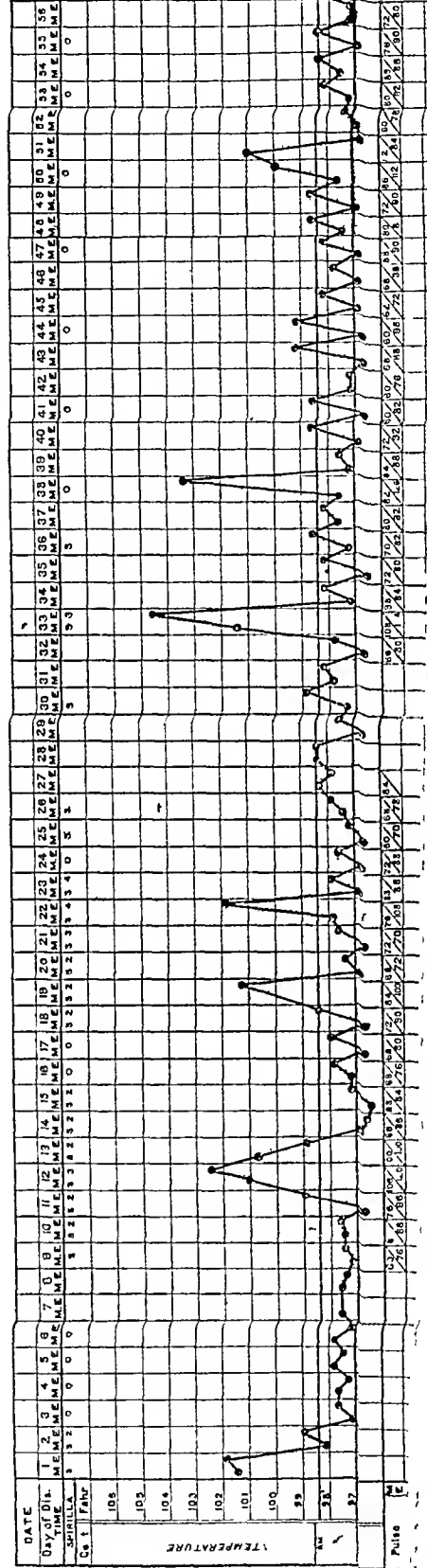


CHART III



disease, only four had any history of malaria during the preceding eighteen months, so it does not appear as if malaria was a predisposing factor. On referring to Chart I and case II on Table A it will be noticed that the man had what was probably an attack of malaria in the month preceding his admission for the spirochætal fever. On examining the relative percentage it will be noticed that his large mononuclear counts conform with the others on the tabular statement in the special points noted below, so that it would appear that recent malaria has no marked influence on the alteration in these cells during the spirochætal disease. In order also to eliminate the malarial factor as much as possible, I have taken as my normal relative count the average of ten men chosen indiscriminately from amongst the regimental followers. These men would show the large mononuclear increase due to malaria, and any variation, if constant, could reasonably be taken as due to some other cause. This average is given on the tabular statement, and on referring to the latter, it will be seen that at the commencement of each case there is a large mononuclear increase, and what is of still more importance, that this increase becomes steadily more marked as the disease progresses. Towards the end of the illness it gradually lessens and approximates to the normal average. This appears a strong argument in favour of the increase being due to the spirochætal infection, were it due to recent malaria, it is reasonable to assume that the decrease to normal, being unconnected with the current disease, would be steady from the first observation onwards. The high mononuclear count found in African Tick Fever is said to be due to recent malaria, so that although this fever and the Quetta type show the same feature, the cause is evidently not the same. Another point of importance is the impossibility of differentiating the Quetta type from malaria by the blood count the latter being the disease with which it is most likely to be confounded in its early stages. With regard to the infecting agent I am unable to give any definite proof. *Cimex* and *Pediculi* are very numerous in the infected buildings. There are also considerable numbers of a tick said to be *Ornithodoros tholozani* and I obtained one solitary specimen of *Argas persicus*. These specimens have been handed over to Lt-Colonel Sir W. B. Leishman at the Royal Army Medical College, who is kindly carrying out experiments with them. Reliable informants have told me of a very fatal disease amongst fowls that is at times prevalent in Quetta, and that it is considered due to infection from the bites of ticks. I was unable to obtain any material for the investigation of this disease. I made one experiment on a healthy man, having him bitten by *Ornithodoros tholozani* previously fed on a case showing

numerous spirochætae in the peripheral blood, but the result was negative. I was unable to obtain any other person willing to submit to the experiment. These ticks appeared most voracious and bit readily. The specimen of *Argas persicus* refused to feed although tried on several occasions. I am inclined to put *Cimex* and *Pediculi* out of count for the following reasons: they are so numerous in the infected buildings that if they were the transmitting agent it is probable that the disease would have been much more prevalent. There are also considerable numbers of these insects in some of the barracks which are free from the disease. *Ornithodoros tholozani* is sufficiently numerous, taking into consideration the voracity with which it attacked man, to make it probable that the disease would have been more universal were it the transmitting agent, on the other hand, no specimens were obtained from the barracks, which therefore may possibly be free from infection for this reason. Should *Argas persicus* prove to be the infective agent, the scarcity of cases in a community of some five to six hundred men living under such favourable conditions for the spread of insect-borne disease would be well accounted for by its few numbers and unwillingness to attack human beings, except when driven by extreme hunger.

Is the fever under consideration Miana, which is said to be conveyed by *Argas persicus*? I was unable to obtain any information of this disease either from medical officers who have served in Persia or educated natives who have resided in that country, nor has any literature to which I have had access given any detailed description of the disease. No fever is recognised as due to a spirochæta in the Quetta district, natives living as private individuals would be unlikely to come into a civil hospital for the short paroxysms of fever which this type entails, and would certainly take the first opportunity of returning to their homes, were any systematic attempt made to examine their blood. Possibly they suffer from a modified form as do persons indigenous to the country who develop African Tick Fever.

I would call attention to the value of the Thick Drop method in examining blood for spirochætae as its use in this particular connection does not appear universally known. I have found that a stain of equal drops of Tabloid Leishman's (modification of Romanowsky) stain with distilled water allowed to remain on the specimen until the nuclei of the polymorphonuclears are of a dark violet tint and almost opaque, gives most excellent results.

As will be seen from Chart A, spirochætae were demonstrated in the peripheral blood as late as the 51st day of the disease and very often could be found without much difficulty during the apyrexial periods, using this method they appear

to decrease slowly after the paroxysm, increasing gradually again for the few days preceding the next onset of fever. Each thick drop was systematically searched at two separate sittings of at least ten to fifteen minutes each, before being classed as negative.

The spirochætae do not appear to differ optically from S. Obermeiri or S. Duttoni, variations in length were noticed in different cases and occasionally in the same case at different times. Some were of such length as to make it probable that two were joined end to end. In no specimen were any of the parasites seen laterally approximated.

A summary of the conclusions deduced is as follows —

In Quetta spirochætal fever. Mild symptoms conforming to those seen in other forms of recurrent fever, a distinctive type of pyrexia with many paroxysms of short duration a poorly marked polymorphonuclear leucocytosis with a well marked relative large mononuclear increase due to the disease.

A spirochæta possessing no optical difference from the classical forms.

The whole disease giving a distinct picture of spirochætal infections in general, but differing in important details from either of the classical forms, namely, Relapsing Fever and African Tick Fever.

GLEANINGS FROM THE CALCUTTA POST MORTEM RECORDS *

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Professor of Pathology, Calcutta

NO VI DISEASES OF THE KIDNEY

RENAL disease is relatively a not very common cause of death at the Calcutta Medical College Hospital, as judged by the *post-mortem* records, although there appears to be no lack of cases diagnosed as such in the wards. Nevertheless, they present some points of interest which are illustrated in the following tables. Two sets of figures have been worked out. Firstly, the recorded deaths from kidney diseases in 4,800 *post-mortems* of the last thirty-seven years up to 1910, and secondly, a more minute analysis of 1,000 recent *post-mortems* during eleven years most of which have been performed by myself. In these last cases minor degrees of disease, which were not the actual primary cause of death, have also been separately shown, especial attention being paid to the early stages of granular disease of the kidney and its relationship to other affections.

TABLE I

Percentages of serious Bright's disease in 4,800 Post-Mortems

	Secondary	Primary
Parenchymatous nephritis		1.02
Granular kidney primary cause of death		1.38
Marked granular kidney with other primary cause of death	1.0	
Renal Calculi	0.27	
Other fatal renal diseases		0.3
Totals of primary and secondary kidney diseases	1.27	2.7
GRAND TOTAL	3.97	

It will be seen from Table I that Bright's disease was the primary cause of death in only 2.4 per cent of the total cases, while in 1.0 per cent more well marked granular kidney was present in addition to other fatal disease. If all important secondary infections are added to the primary ones, then in four per cent of the bodies serious renal disease was found *post-mortem*.

TABLE II

Percentages of renal disease in 1,000 recent Post-Mortems

	Primary cause of death	Marked plus other disease	Slight plus other disease	TOTAL
Parenchymatous nephritis	1.2	0.1		1.3
Granular kidney	2.4	1.7	5.0	9.1
Other fatal renal disease	0.6	—	—	0.6
TOTAL	4.2	1.8	5.0	11.0

In the thousand recent *post-mortems* shown in Table II, I have been through the notes of the condition of the kidneys and have included in the table the minor changes in the organs found in those who had died of other conditions, as well as the primary kidney diseases. It was thus ascertained that in addition to the 4.2 per cent of deaths due primarily to renal disease, in 1.8 per cent more well marked disease of the kidneys nearly always contracted granular in nature, was found in subjects dying of other affections, thus making 6.0 per cent of serious renal change. Further, in 5 per cent more very early changes were found recorded, either some slight narrowing of the cortex or a slightly roughened surface, sometimes with adhesion of the capsule. Such minor changes are not likely to produce any definite clinical symptoms, but they may possibly predispose to a fatal termination in other serious diseases, so it will be of interest to study the frequency of their occurrence in relation to the primary causes of death in a later section of this paper.

* Read before the Medical Section of the Asiatic Society of Bengal, June 1912.

SEX AND RACE INCIDENCE OF PARENCHYMATOUS AND GRANULAR KIDNEY

From the point of view of diet the race incidence of Bright's disease in Calcutta is of considerable interest, for the poorer classes of Hindus eat little meat, Mahomedans eat more than the Hindus, and Europeans considerably greater quantities than either of the Indian races. The data are shown in Table III, together with the sex figures, and for comparison those of all the subjects in 4,280 *post-mortems* of which the data are available.

TABLE III

Race and Sex incidence of Bright's disease

	Parenchymatous kidney		Granular kidney		Total		All diseases
	No	%	No	%	No	%	%
Hindus	20	54.1	65	65.0	35	62.0	67.4
Mahomedans	9	24.3	19	19.0	28	20.4	20.5
Europeans	6	16.2	15	15.0	21	15.4	8.2
Others	2	5.4	1	1.0	3	3.2	3.9
Total	24	64.9	65	65.0	89	65.0	78.1
Males	13	35.1	35	35.0	48	35.0	21.9
Females							

The above figures are of considerable interest. In the first place, they show that the incidence of Bright's disease is twice as great in proportion to their numbers among the meat-consuming Europeans, while it is below the normal proportion among the largely vegetarian Hindus, the Mahomedans occupying an intermediate position in both respects. The especially low incidence among Hindus is seen to be almost entirely due to the small proportion of parenchymatous kidney among them, namely, 54.1 per cent of that form of Bright's disease against 67.4 per cent of Hindus in the total subjects. The double rate of parenchymatous nephritis among the Europeans is also not explainable on any other ground, such as their age incidence, for it will be seen from the figures in Table IV that parenchymatous nephritis is most frequent in the early decades of life in which there are a smaller proportion of Europeans than of other races in the records, so it might have been expected that there would have been a correspondingly low incidence of large white kidney among them rather than a great excess. On the other hand, in the case of granular kidney, it appears from Table IV that one-half of this type occur over the age of forty, and as there are nearly twice or more Europeans over that age, the exceptional prevalence of granular contracted kidney among Europeans is largely accounted for by this fact alone. The slightly lower rate among Hindus is also explained by the low age incidence of that race in the records. We may, therefore, conclude that an excess of proteid diet

only predisposes to the parenchymatous form of Bright's disease, while a largely vegetarian one protects to some extent against that disease.

The Sex Incidence shows a considerable and surprising excess among females, which is equally marked in the two great classes of Bright's disease. This is at variance with European experience, and I am unable to offer any reasonable explanation of it.

TABLE IV

Age incidence of Parenchymatous and Granular Kidney compared with that in London

	PARENCHYMATOUS				GRANULAR				ALL DISEASES
	Calcutta		London		Calcutta		London		Calcutta
	No	%	No	%	No	%	No	%	%
0-10	3	6.4	12	27.3					2.5
11-20	11	23.4	7	16.9	4	4.7	1	0.4	13.4
21-30	13	27.6	10	22.7	16	19.1	17	7.0	35.3
31-40	14	29.8	9	21.4	22	26.2	38	15.7	27.8
41-50	6	12.8	4	9.1	17	20.2	73	30.2	13.3
51-60			2	4.5	23	27.4	55	22.7	5.8
+60					2	2.4	58	24.0	1.9
TOTAL	47		84		84		242		

In Table IV are shown the data regarding the age incidence of parenchymatous nephritis and granular kidney respectively, together with the figures of Dickenson in London, as recorded in his article in Clifford Allbutt's System of Medicine, for comparison. The Calcutta data reveal a very marked difference in the age incidence of the two forms of Bright's disease. Thus, in the first two decades of life no less than 29.8 per cent of the parenchymatous form occur against only 4.7 per cent of the granular variety, while over the age of forty years only 12.8 per cent of parenchymatous fall against no less than 50 per cent of granular disease. Dickenson's London figures show a similar but even more marked variation between the two forms of disease. The first decade shows the maximum prevalence of the parenchymatous form, which is strikingly different from the Calcutta experience, and is doubtless due to the great proportion of scarlatina cases in the London series, which Dickenson notes mostly occurred in the first decade, while this disease is very rarely if ever met with in Calcutta (See Fevers in the Tropics). Further, in London the high incidence of granular kidney continues over the age of 60, which is not the case in Calcutta, but this is simply due to the fact that only 1.9 per cent of the Calcutta *post-mortem* subjects were over that age, while in London the proportion must be far higher.

I have also worked out the age incidence of the cases in which only early granular changes

were present and find that the maximum prevalence of the disease both begins and ends a decade earlier than that of advanced cirrhosis of the kidney, which points to the disease being one of very slow development, usually taking years to produce marked contraction of the organ.

TERMINATIONS AND COMPLICATIONS OF BRIGHT'S DISEASE

Parenchymatous nephritis commonly produced death directly without the addition of any serious disease except pneumonia, which was present in 12 per cent of the cases. On the other hand, granular kidney more frequently ended with such serious complications as dilated heart in 15 per cent, cerebral hæmorrhage in 13.5 per cent, in emia in 6 per cent, hypostatic pneumonia in 4.5 per cent, while cirrhosis of the liver was found in 7.5 per cent. Pericarditis was present in one case of parenchymatous disease and in one of granular kidney, while other complications of the latter disease were hydropericardium, bronchitis and pleurisy, each twice and bacillary dysentery once.

THE FREQUENCY OF THE ASSOCIATION OF COMMON FATAL DISEASES WITH MINOR DEGREES OF CONTRACTED GRANULAR KIDNEY

In connection with the great importance attached by insurance workers to minor degrees of kidney disease it will be of interest to record the following analysis of the causes of death in those subjects who presented a greater or less degree of granular contraction of the kidney after death from other causes. The data are shown in Table V, together with the percentage of deaths from the different diseases in the same thousand *post-mortems*. In the last column is shown the approximate ratio of granular kidney to the number of cases of each primary disease thus giving the excess or deficient prevalence of granular kidney in the general affection.

The results are very instructive. In the first place, it appears that some degree of contracted granular kidney was present in cases of cirrhosis of the liver five times as frequently as in the total *post-mortem* subjects, the ratio being thus expressed in the last column of Table V as 5 to 1. This confirms in a striking manner the well-known relationship between these two affections, which was also dealt with in No. IV of these papers on cirrhosis of the liver. Sir William Osler noted the same relationship in America, but curiously enough, Dickenson denied it, while at the same time stating granular kidney was found in one of seven cases of cirrhosis of the liver, which is surely an excessive proportion.

TABLE V

The Association of Contracted Granular Kidney with other common diseases

	Percentage of granular kidney in	Percentage in all <i>post-mortems</i>	Ratio of excess or deficient prevalence
Cirrhosis of liver	21.2	4.2	Excess 5 to 1
Tetanus	6.0	2.0	Do 3 to 1
Cerebral apoplexy	6.0	1.8	Do 3 to 1
Aortic regurgitation	6.0	2.2	Do 3 to 1
Bronchitis	4.5	1.9	Do 2 to 1
Dysentery	15.1	10.5	Do 3 to 2
Pneumonia	12.1	10.0	Do 12 to 10
Cholera	12.1	10.7	Do 12 to 11
Kala-azar	9.1	0.1	Ratio 1 to 1
Pulmonary phthisis	4.5	12.2	Deficient 1 to 3

The next most frequent association is that between some degree of contracted granular kidney and cerebral apoplexy (including hæmorrhage, cerebral softening and thrombosis), in which renal disease was found to be in excess in the ratio of three to one, mainly in cases of cerebral hæmorrhage. Aortic regurgitation, doubtless, predisposed to by the high blood pressure associated with cirrhotic kidney, was also in excess in the ratio of three to one. Tetanus showed a similar excess of granular kidney, which appears to be due to a difficulty in the excretion of the toxins by the diseased kidneys. Bronchitis and dysentery show lesser degrees of excessive association with granular kidney, the former probably on account of its frequent occurrence in old people, and the latter also due to deficient toxin excretion. Pneumonia and cholera show a slightly excessive prevalence of granular kidney, in spite of the age incidence of these diseases being below the normal, which would tend to reduce the proportion, and it is noteworthy that these are also diseases whose mortality is very largely dependent on the action of bacterial toxins. Of the remaining most frequent causes of death in Calcutta kala-azar showed no departure from the normal proportion of kidney disease, while pulmonary phthisis revealed only one-third of the ordinary incidence of contraction of the kidney, which is only partly accounted for by the somewhat low age incidence of phthisis in Calcutta as given in Paper II of this series. I am unable to explain this fact, especially in view of Osler's experience that acute tuberculosis is somewhat commonly associated with Bright's disease.

The most noteworthy conclusions of the above inquiry are (1) the intimate relationship between contracted granular kidney and cirrhosis of the kidney, including minor degrees of that affection, and (2) the greater fatality of bacterial diseases with marked toxin formation if any renal fibrosis is present.

RENAL DISEASES OTHER THAN BRIGHT'S

These are of relatively little importance. Diabetes which may be conveniently included here was only recorded six times in the 4,800 *post-mortems*, or in 0.13 per cent, which shows that the disease is comparatively rare among the poorer classes who enter the medical wards in Calcutta, although it is well known to be a very common and fatal affection among the well-to-do people with their rich and varied diet. Suppurative disease of the kidney was also very rare in the medical records, although one case of multiple small renal abscesses due to infection with the bacillus *Coli communis* is worthy of mention, the renal disease not having been suspected during life. Calculi were only noted in 13 cases, or 0.27 per cent, usually having been of secondary importance, although in one case they produced fatal suppurative pyelitis. Cancer, gumma and sarcoma were each met with once. Amyloid disease of the kidneys is recorded several times in the earlier records, usually as a complication of phthisis or other exhausting disease.

A Mirror of Hospital Practice

SURGICAL CASES

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THE following cases, which were observed at Meshed, appear to be worthy of record —

(1) *Dermoid Cyst of an Undescended Testicle*

The patient, a Persian of 35, complained of a movable tumour in his abdomen. He had noticed it for several years and thought that it was growing larger. It gave him pain occasionally. On examination a hard rounded tumour was detected, freely movable in all directions. The patient himself pushed it up out of the pelvis, remarking that it was more easily felt up above. The diagnosis was in considerable doubt till it was discovered that there was no right testicle either in the scrotum or in the inguinal canal, when it was conjectured that the tumour might have some connection with the missing organ. On opening the abdomen a rounded tumour with a long pedicle was discovered and removed. Both kidneys were present. The wound was closed in the usual manner and the patient made an uneventful recovery, in spite of the fact that he was found walking about the hospital on the third day. The tumour measured some 7 by 4 inches and retained the shape of a normal testicle. The pedicle consisted of the vas and vessels (greatly enlarged) and a covering of

peritoneum. The wall of the tumour was thick and the cavity unilocular, the contents including hair and bone in addition to the ordinary dermoid material.

(2) *Dermoid Cyst of the Right Orbit.*

A man of 40 presented himself with a bulging swelling to the inner side of his right eye and with his right eye displaced outwards, downwards and forwards. His appearance was grotesque. He complained of the latter and of failing vision. On examination a fluctuating tumour was found filling up the greater part of the right orbit and apparently adherent to the inner wall. At operation, an elliptical incision was made over the tumour and a dark-walled cyst came into view. This was gently separated on its outer side and found to be extending towards the apex of the orbit. The cyst wall was easily separated on its outer side from the capsule of the eye, but on the nasal side it was firmly adherent and very thin and unfortunately burst during the manipulations. After evacuation the cyst was found to extend to the apex of the orbit. As much as possible of the cyst wall was then removed and the remainder, a deep portion adherent to the bone, was thoroughly scraped. The patient made a good recovery, and on his discharge the position of the right eye had nearly approximated to that of the left and his appearance had much improved.

(3) *Ninety-two Calculi in a Pouch of the Urethra*

A boy, aged 8, was brought to the hospital by his parents. They stated that the child did not pass water through the proper channel and that there was a hard swelling at the base of his penis. On examination a swelling was seen on the under surface of the penis of the size of a small orange. The swelling extended from the scrotum to within half an inch of the glans and inclined to the left. A urethral fistula opened at the lower end of the tumour through which all the urine passed. The swelling felt exactly like a bag full of stones. The meatus was patent and a sound was passed into the bladder, no stone being detected there. A director inserted through the fistula passed straight into the swelling and numerous stones were felt. At operation the fistula was slit up and a saccular dilatation of the penile urethra discovered. From this dilatation 96 calculi were removed. The calculi varied in size from that of a marble to that of a fig seed. An attempt was then made to obliterate the dilatation and to close the fistula but only the latter part was successful. On his discharge, further treatment being refused, urine was passed through the meatus only, but the swelling reappeared unless pressure was exercised at the moment of micturition.

(4) Fibroma of the Floor of the Mouth

A woman, aged 28, presented herself at the hospital with a large red swelling, the size of a polo ball, protruding from her mouth. She stated that she had had a tumour there for twenty years and that it was gradually enlarging. On examination the tumour was found to be of moderate firmness, covered in the upper part by the thinned-out tongue in an advanced stage of glossitis, and for the remainder of its extent by the everted mucous membrane of the floor of the mouth. Her mouth was permanently propped open by the tumour. The lower jaw, from the pressure of the tumour, was prolonged downwards, thinned-out and toothless. There was great impediment of speech and much difficulty in eating. The tumour was shelled out without difficulty and proved to be a soft fibroma. After the operation the condition of the tongue and mouth rapidly improved, the tongue contracting down to almost its normal size. The resultant deformity was not very marked and talking and eating much improved.

(5) Fibroma of the Left Shoulder

This case was noteworthy on account of the age of the patient and the size of the tumour. The patient was an Afghan from Kandahar, aged 70, and the tumour was of the shape and size of a Rugby football. The old man stated that he had carried it in a sling over his chest for years. At operation flaps were dissected up from the base of the tumour which was adherent to various fasciæ and ligaments in the neighbourhood of the clavicle. There was considerable bleeding, but the old man stood the operation well and made a good recovery.

(6) Effects of a Fall from a Roof

The patient, a Persian, aged 27, fell some 40 feet off the roof of a house. He was picked up unconscious and brought to hospital. He quickly recovered consciousness, and on examination he was found to have sustained, in addition to numerous cuts and bruises, a compound fracture of the nose, a fracture of the superior maxilla, a dislocation of the lower jaw on the left side and simple fractures of both forearms. The fracture of the superior maxilla was the interesting point, it extended from between the middle incisor teeth straight back through the palate, and the left superior maxilla and palate bone were lying parallel, but one inch nearly posterior to those of the right side. The left maxilla was brought forward and wired in position, the wire being passed through the palate bone of each side and brought out above the lateral incisor teeth. The dislocation was reduced with some difficulty, and the other injuries attended to in the ordinary way. An excellent recovery was made, but the patient refused to have the wire removed, and I met him in the street some months later with it still in position.

(7) Fracture of the Arm in two places by Stabs from a Knife

I record this case as I do not remember hearing of a similar one. An Afghan of 25 was attacked in the street one evening by a man with a dagger. The Afghan was unaimed except for a stick, and he put up his left arm to protect his face. He received two blows from the dagger on his arm before his assailant was beaten off and fled. One blow severed the external condyle of the humerus from the shaft and the other cut the ulna diagonally across three inches above the wrist. The fractures were both wired with success.

(8) Persian Judicial Surgery

Two cases came for treatment after mutilation at the hands of the public executioner. One was a man of 22 whose four fingers of the right hand had been cut off through the meta-carpo-phalangeal joints. The patient applied for treatment four days afterwards, and the heads of the four metacarpals were projecting in the midst of a sloughing and gangrenous mass. Partial amputation was done at the level of the wrist joint, and there was a good recovery, the thumb which it was found possible to save, having fair movement. The man had been mutilated as a punishment for murder.

The second case was a highway robber, both of whose heels had been cut through above the os calcis. The cut was a deep one and the tendon of the tibialis posterior severed in addition to the Achilles tendon. The tendons of the posterior were easily secured, but a long incision had to be made to reach the upper end of the Achilles tendon. The patient made a fair recovery, resumed his old occupation and was ultimately hanged.

I interviewed the executioner one day and he told me that he had been brought up in his trade by his father. He used a triangular shaped bluntish knife and displayed considerable knowledge as to the line of incision to be taken so as to hit the various joints. He added that he never had any difficulty about stopping the bleeding as his practice was to apply at once a mixture of lime and earth to the wound.

NOTES ON A CASE OF DOUBLE VOLVULUS OF THE LARGE INTESTINES AND ON ONE OF POSTERIOR GASTRO JEJUNOSTOMY

By O G HASSAN SUBHAWARDI,

ASST SURGEON,

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A CASE OF DOUBLE VOLVULUS OF THE LARGE INTESTINES —R G

H M 28, cultivator, was admitted into hospital on the evening of the 15th August 1910,

with history of recurrent attacks of constipation and colic for some years. He had absolute constipation, having passed no feces or flatus for five days. At the time of admission his abdomen was distended, tense and tympanitic, painful to pressure in the umbilical region, and he was having occasional colicky pain all over the abdomen. The whole abdomen moved with respiration, which was not segmental. There was no visible peristalsis. The patient had several times vomited up bilious matters. A foetid enema was given, and turpentine stupes on the abdomen ordered. The patient passed out the enema without any faecal matter in it, but was said to have passed some flatus. The next morning the patient's condition had not altered and the bowels did not respond to a strong foetid enema and he passed no flatus. He had been vomiting, his eyes were sunken, and he looked very ill. The patient was accordingly prepared for operation without any further loss of time, and was operated on by Major R. Bird, I.M.S. A long incision was made reaching from the ensiform cartilage to the symphysis pubis, and the intestinal contents exposed. The sigmoid flexure was found twisted on itself from left to right, double half twist, the transverse colon which had an abnormally long meso-colon was found hitched on itself by a half twist. It was thus a case of double volvulus. The looped portions of the large gut were highly congested and oedematous, extremely distended, being about five times its normal size. There was marked thickening from oedema of the meso-sigmoid and transverse meso-colon. The twists in the bowels were undone, and a large rectal tube passed for about a foot into the rectum and the bowels flushed out with warm saline solution, a large quantity of offensive fecal matter was thus evacuated. The intestines after being unloaded and flushed out, were replaced in the abdominal cavity and the abdominal wound stitched. The rectal tube was retained *in situ*, eight inches of it being in the rectum. Nothing except warm water was allowed for twenty-four hours, then albumen with a pinch of salt in it was given, as also some *raisin tea*. This last is made by putting two dessert-spoonfuls of cleaned, chopped raisins in about 3 ozs of water, which is then stewed until 2 ozs are left, beaten up with a spoon, strained through coarse muslin, and given to the patient when cool. This, because of the glucose in it is of good nutritive value and is totally absorbed leaving very little residue and does not cause flatulence, while the aromatic and other substances naturally existing in the raisins have a mild laxative effect. It is thus an excellent food and drink for abdominal cases. It has been tried in the ward under my care in a number of cases and found superior to sherry or lime whey.

On the second night after the operation, the patient's abdomen became distended and was

found next morning very tumid, the intestines had become paralytically distended. A compound enema (of castor oil and olive oil, of each one ounce, oleum terebinth, one diachm, with asafoetida, half diachm, mucilage quantum sufficit, and soap water to two pints) was given slowly with a long tube. It had a good result, the patient passing a good deal of flatus and a liquid motion.

On the 4th morning, quarter grain doses of calomel with three grains of soda bicarb were given every half hour up to twelve doses. This was followed up the next day with diachm doses of saturated solution of sodi and mag sulph. every hour. The bowels acted very freely. The rectal tube was carefully kept in place all the time. The stitches were removed on the tenth day and the patient was allowed solid food on the twelfth day after the operation, and discharged on the 14th September with a firm scar and in the best of health, after being kept under observation for about a month.

The case is of great interest, for the double looped volvulus of the large intestines is very rare, and complete cure of a five-day obstruction with enormously distended, oedematous, and congested bowel and mesentery is rare still.

In conclusion I desire to express my indebtedness to Major R. Bird, I.M.S., for his very kind permission to record this, as well as the next case, which to my knowledge is the first of its kind yet recorded in this country. I shall feel obliged if any of the many readers of this esteemed journal will be pleased to enlighten me on this point if I am wrong.

A CASE OF POSTERIOR GASTRO-JEJUNOSOMY.

H. M., 28, a drawing-master from the district of Midnapur, was admitted into the hospital on the 15th of August, complaining of having suffered for the last five years from constant pain in the epigastrium which was aggravated after taking food, from acidity, and from great discomfort soon after his meals, which was relieved by vomiting.

He gave a history of melæna, but no hæmatemesis, he had suffered very much from diarrhoea, which was partially controlled by his habit of taking a gram of opium twice daily for the last two years. The patient had an anxious countenance as of one in great pain, he was greatly emaciated, the abdomen retracted and veins prominent. The resonant area over the stomach was abnormally large, and splashing sound could be easily elicited. The peristaltic action of the stomach could be seen distinctly on pinching or kneading the viscus. The urine was alkaline. It showed *uridican* and bile and traces of earthy carbonates and phosphates.

From the time of admission the stomach was washed out regularly with a solution of half a diachm of sodi bicarb to a pint of water every

morning, and he was treated generally for dyspepsia.

A week after admission a *test meal* was given to the patient and the gastric contents examined with the following result: Reaction acid. Free acid—present. Hydrochloric acid—present. Lactic acid—traces. Butyric acid—*nil*. Total acidity, 16 per cent. Albumin—present. Albumose—present. Bile—*nil*. Blood—*nil*. Microscopic examination showed that mucus and starch granules were present.

On the 6th September 1910, the patient was given a *bismuth meal* and examined under the *X rays* about four hours afterwards. The stomach was seen to be very much dilated, the pyloric orifice being in the right loin, and it was in this situation that a dark shadow was seen due to the collection there of the bismuth meal, in spite of the fact that four hours had elapsed between the meal and examination. No trace of bismuth appeared in the intestines. There seemed to be definite kinking and contraction of the pyloric end of the stomach. The pylorus moved with respiration and also on palpation between two fingers. The fact that the patient had a dilated stomach with marked stenosis of the pylorus having been thus demonstrated, and, as the patient did not improve under treatment and was steadily going down hill, an operation was decided upon. On the 13th September, after washing out his stomach and preparing him for operation, Major Bird performed a modified Von Hacker's operation of Posterior Gastro-Jejunostomy. The patient being extremely feeble, ether anaesthesia was employed instead of chloroform. The pyloric end of the stomach was found thickened and cartilaginous. The small intestines were put out of the way and covered with abdominal towels wrung out of warm sterile water. The transverse colon was withdrawn from the wound and similarly treated. The termination of the duodenum was arrived at by palpating along the transverse meso-colon, near the lower border of the pancreas.

Thus a portion of the jejunum as high as desired could be got at easily, and so the establishing of an anastomosis too low down, and the loss of a large absorbing surface (which may cause rapid emaciation of the patient even when the operation as such is successful), was avoided. An incision was made through the transverse meso-colon and the lesser sack of the peritoneum opened, and the posterior wall of the stomach reached. The margins of the opening were stitched to the posterior gastric wall. A clamp was placed on either side of the selected portion of the bowel, and also across that of the stomach. Sterilised gauze was packed all round the site of operation to catch any fluid that might escape. The sero-muscular coats of the jejunum and the stomach were sutured at the lower part

by fine continuous sutures of silk, leaving the ends long. A longitudinal incision was made into each viscus about two inches long and about half an inch in front of the line of the sero-muscular suture. A second suture was employed to stitch the jejunal with the gastric mucous membrane all round the opening, the assistant pushing the viscera forward, so as to approximate them as the anterior part of the incisions were reached. The peritoneal toilet having been completed, the different viscera were replaced carefully in their proper places and the abdominal incision closed with twelve interrupted sutures of silk-worm gut. The patient was dressed with dry aseptic gauze and removed to the ward. He was allowed only small sips of warm water for the first 48 hours, care being taken that the stomach was not in any way overloaded. Nutrient enemata of six ounces of peptonised milk was given four times a day. On the first night of the operation the patient's chest was full of râles and the mild attack of bronchitis he had before the operation was accentuated by the ether anaesthesia. His temperature ran up to 101.6. For two nights 1/100th grain of atropin sulph. was injected subcutaneously to stop the secretion of the bronchi.

At the end of 48 hours, raisin tea was allowed by the mouth, by the fifth day after the operation rectal alimentation was stopped and a little sago mixed with raisin tea was given. The bowels were unloaded periodically by means of the compound foetid enema mentioned above, given slowly with a long tube. Alternate stitches were removed on the seventh day after the operation. On the tenth day all the stitches were taken away, and soft solid food allowed.

This case is remarkable, for, in spite of the extremely rundown condition of the patient which necessitated substituting ether for chloroform anaesthesia, he bore the shock of the operation well and did not show one bad symptom. He never had regurgitant bilious vomiting, nor did any other evidence of a vicious circle supervene. In fact, his general health improved considerably within a short space of time.

A CASE IN WHICH VON PIRQUET'S REACTION WAS FOLLOWED BY ASCITES

By D. G. COOPER,

LIEUT. IN S.,

42nd Deoli Regiment.

Previous History—In September 1911, Sepoy P was admitted into the regimental hospital for fever. As the result of a Widal's test a diagnosis of "Enteric" was made. There was no splenic enlargement and the temperature chart is unlike that of typhoid fever. The

By ASST SURGN O G HASSAN SUHRAWARDY,
House Surgeon, Medical College Hospital

[illegible]

Day of Dis.	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10	2	6	10																						
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DATE	13	9	10	14	5	10	15	9	10	16	8	20	17	9	10	18	9	10	19	9	10	20	9	10	21	9	10	22	9	10	23	9	10	24	9	10	25	9	10	26	9	10	27	9	10	28	9	10	29	10	30	20

condition lasted one month, and after another month's convalescence in hospital the patient was sent on three months' sick leave.

History of Present Illness—Sepoy P returned from leave with a discharging sinus in the right side of his neck. There was also a large swelling above the sinus under the middle of the sternomastoid muscle and a little behind it. The discharge from the sinus was thin and watery with now and then some caseous material. The diagnosis of tubercular glands in the neck was made, and a request to invalid the man was sent to head-quarters.

About this time Messrs Burroughs and Wellcome sent me a number of drugs as an advertisement, and amongst others was some tuberculin human for von Pirquet's reaction. This was tried on the 7th of March. There was no cutaneous reaction. From the 8th to the 13th of March the temperature varied from 100° to 101° in the morning and from 102° to 104° in the evening.

On the 14th and on the morning of the 15th the patient complained of some uneasiness in his abdomen, but I was not told of it. On the evening of the 15th he was in pain and the Sub-Assistant-Surgeon gave him an enema which had no effect in reducing the pain. The temperatures on these two days were 99.2° and 98.4° in the morning and 100° and 101° in the evening. 16th March—temperature morning 98.4° evening 101°.

Patient is lying on his back, the abdomen is swollen, the umbilicus is level with the rest of the skin, the superficial abdominal veins are not distended. Respiration is thoracic-abdominal.

Palpation shows no abdominal rigidity, there is a little tenderness in the left iliac fossa.

The percussion note is dull at the flanks and tympanic in the middle of the abdomen. The dullness shifts with the position of the patient. The thrill given by fluid can be felt.

There is nothing to note in the respiratory or circulatory systems.

17th—22nd March—The ascites is diminishing daily. The patient is beginning to look thin about the face, which was fat on admission.

At this juncture the invaliding papers came back from the P. M. O. of the division and the man was invalided. I tried to keep him in hospital, but he would not stay.

A few days later, before leaving the station, he came to see me. The ascites had increased and the man looked very ill, and in spite of all our efforts he left for his home.

The first question that rises to one's mind is—did the tuberculin cause the ascites—and, if so did it light up an old or a new affection? There are no notes on the attack of enteric fever but the Sub-Assistant-Surgeon of the regiment tells me that the officer who made the

diagnosis was in doubt about it. It might have been tubercular peritonitis. If so, could the very small quantity of tuberculin used for Von Pirquet's reaction cause such a severe and acute relapse?—or was the sequence accidental?

I presume the ascites commenced on the day on which the patient complained of pain in his abdomen, because it was well marked on the day I examined the man. If so, it is interesting to note that the beginning of the ascites, like the appearance of the rash in many fevers, was accompanied by a fall in temperature.

THE RELATIONSHIP BETWEEN "PYREXIA OF UNCERTAIN ORIGIN" AND ENTERIC FEVER

By D. M. TAYLOR, M.B.,

Lieut., I.M.S.

I READ with much interest an article in the August number of the *Indian Medical Gazette*, by Captain James Husband, I.M.S., and Lieutenant H. V. Hodge, I.M.S., on certain obscure cases of pyrexia which they had had under observation. I propose to place on record a very interesting series of cases which I had in my charge between January and March 1912.

Some of these cases gave a clinical picture resembling a typical attack of enteric, others a mild or less typical form, but in all Widal's reaction was persistently negative, an undoubted case of enteric with a marked positive reaction died in hospital at the commencement of the series, three of the cases resemble enteric so closely that no other diagnosis is possible in spite of the negative reaction, while two others resemble a mild enteric or paratyphoid infection, and are similar, I imagine, in many respects to some of these cases referred to in the above quoted article. The cases have an important bearing on two questions and fall naturally under one or other of two headings, viz—

- (1) Enteric fever giving a negative reaction
- (2) Pyrexia of uncertain origin

The case of enteric fever which gave a positive reaction was admitted on January 14th and died on January 28th, 1912. The reaction was positive in dilutions even of 1 in 160.

Case I—The first case of this series, admitted on January 2nd, had twenty-one days pyrexia, six days intermission, and a relapse of twenty-one days which appears to have been brought on by his eating some sweetmeat given him by a friend (*sic*). The pulse was relatively slow throughout.

There were very marked rhonchi all over the chest, sometimes very moist in character, but unaccompanied by other physical signs. It was noted that the amount of the rales appeared to increase concomitantly with an exacerbation of fever and *vice versa*. The spleen was not enlarged and there was no rash nor diarrhoea. The patient became lethargic, drowsy, and anæmic, but was

remarkably free from delirium. Widal's reaction was negative on the 21st day of the disease and again on the 40th day in dilutions even of 1—20. Reactions for paratyphoid A & B were also negative on the same days. Blood was repeatedly negative for malaria.

Case II—Admitted January 14th, had a temperature curve closely resembling enteric, a relatively slow pulse and marked signs of bronchitis which closely resembled the previous case. Both these cases for a time were regarded as bronchopneumonia, but this diagnosis was soon given up. There was no enlarged spleen nor diarrhoea. The patient complained very little about his chest condition and had little cough. There was a certain amount of prostration but only slight delirium. Widal was negative (including paratyphoid A & B) in dilutions of 1 in 20 on the 9th and 35th day. Blood was negative for malaria throughout. The tongue in this case was moist and clean.

Case III—Was interesting from the fact that he was a brother of No I and had nursed him in his illness. He was admitted one month after his brother became convalescent and was possibly a case of direct infection. He had fever for 45 days, bronchitis, which was less severe than in above cases, a relatively slow pulse, no enlarged spleen, nor eruption. He appeared better than one would expect during such a prolonged attack of fever and had no delirium. He had at times a tendency to diarrhoea. Widal was negative on the 6th and 28th day, a blood culture on bile salt agar taken on the 6th day showed no growth, reaction for micrococcus melitensis was negative on the 28th day, and malaria was negative throughout.

Case IV—Admitted January 26th, had sixteen days fever with physical signs of bronchitis and a relatively slow pulse. He was never very ill. Widal was negative on the 17th day, including paratyphoid group. Malaria was negative on the 92nd day and quinine was tried without effect.

Case V—Had thirteen days fever and possibly a day or two more before admission. His chart shows large undulations. His pulse was relatively slow, spleen was not enlarged. He had practically no symptoms apart from the pyrexia and appeared remarkably well. Widal (including paratyphoid group) was negative on the 8th day. A blood culture on the same day gave no growth, malaria was negative and quinine had no effect.

These two last cases appear to me to link together this series with those cases described by Captain Husband and Lieut Hodge, and suggest an enteric origin in most of these cases. The cases all made a good recovery and have had no sequelæ.

A sixth case may be briefly referred to. He died soon after I arrived in the station, and I only saw him once or twice. The date of his death, the 14th January, corresponds with the commencement of the above series and suggests a connection with it. He

had intermittent pyrexia for 22 days. His blood was negative for malaria and his liver normal to percussion. On the 13th day pain set in round the umbilicus with nausea. The pain later in the disease became severe and the vomiting incessant and the abdomen full and tympanitic. He died on the 28th day of the disease. His case is interesting as being one of obscure pyrexia occurring at this time, but differs considerably from the other cases referred to.

We have had six cases occurring apparently in epidemic form, in conjunction with one case with a positive Widal, three of the cases resemble typical enteric so closely that no other diagnosis seems possible, two suggest mild or paratyphoid infections, while the case, which may not have any connection with the others, has little resemblance to enteric and had it occurred sporadically, would scarcely have suggested such a diagnosis. In these cases Widal was repeatedly and absolutely negative. As a series they suggest that enteric fever may not only occur in mild and atypical forms, but also that in these forms Widal's reaction may be negative. They further suggest that there is a possibility of a particular type of typhoid infection which does not react to the present Widal test, and that these cases, especially when sporadic and atypical, account for many obscure cases of fever in India which are returned as "Pyrexia of uncertain origin."

ABSCCESS OF LIVER WITH AMCEBÆ, BUT WITHOUT ANTECEDENT BOWEL DISEASE

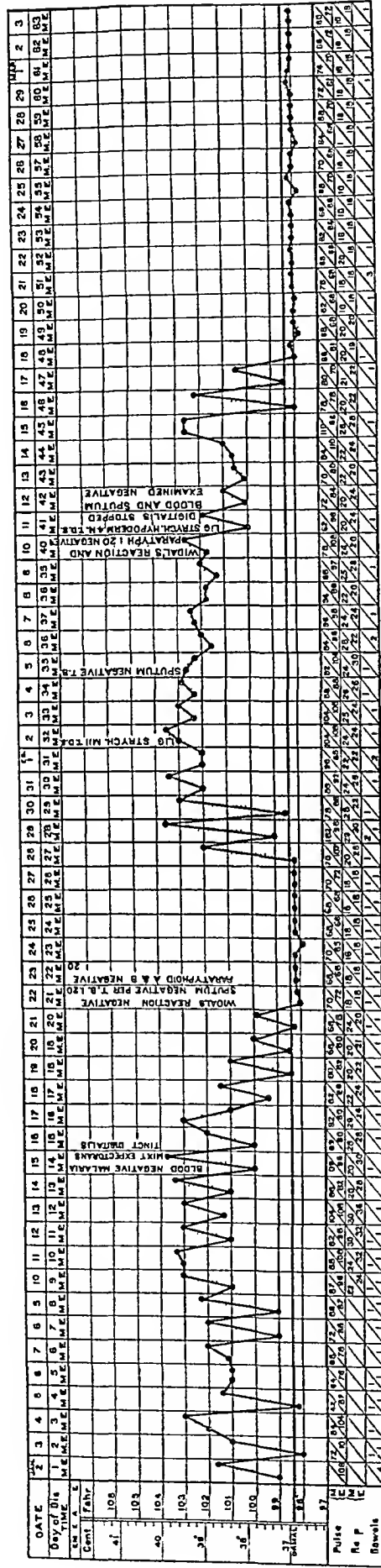
BY A. R. S. ANDERSON, B.A., D.P.H., C.M.S.,
LT COLONEL, I.M.S.

AN Eurasian guard was admitted to the Chittagong Hospital on the 12th December 1911, suffering from abscess of the liver. He was greatly emaciated and in a state of extreme weakness. From close examination both of himself and his wife no history of bowel trouble, either recent or remote, could be elicited. He had always been a total abstainer from the use of alcohol. Some four or five years ago, perineal section was performed upon him in the Chittagong Hospital for stricture of the urethra. Since then, as also probably before, he had been liable to chronic urethral discharge. On the day following admission into hospital the abscess which presented below the costal margin was opened freely and about one pint of the usual liver abscess pus evacuated. Unfortunately pressure of work prevented my examining the pus microscopically for a few days. However, on the 16th, three days after the operation, at my request, one of the Sub-Assistant-Surgeons examined it but could detect no amcebæ. The following day I examined a specimen of the pus obtained by drawing a loop of wire over the

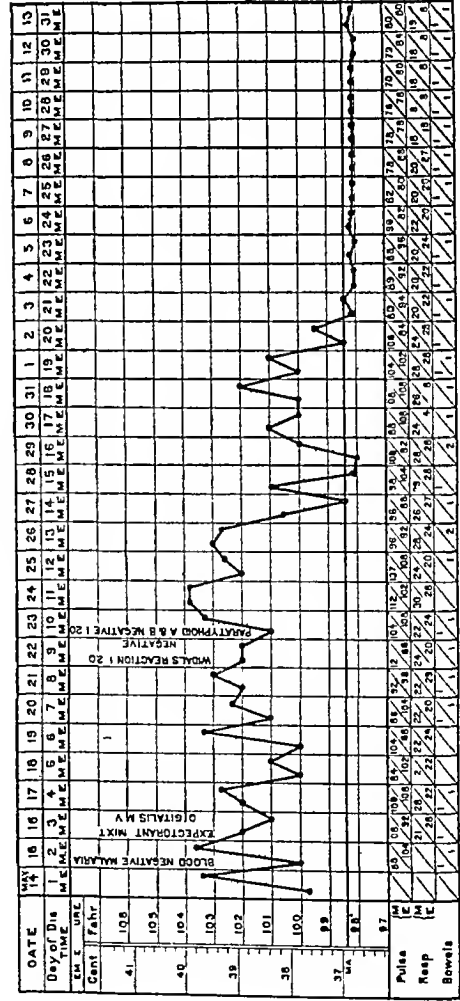
THE RELATIONSHIP BETWEEN "PYREXIA OF UNCERTAIN ORIGIN" AND ENTERIC FEVER

BY LIEUT D M 'TAYLOR, MB, IMS

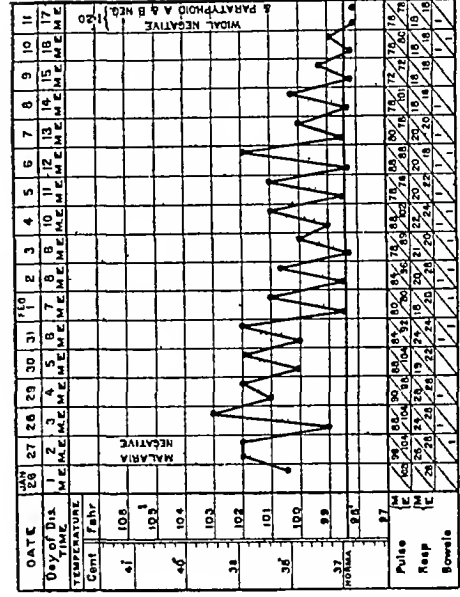
CASE I



CASE II



CASE IV



BI LUT D M FAYIOR, MB, 1MS

[illegible]

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DAY 116	143	118
DAY 117	144	119
DAY 118	145	120
DAY 119	146	121
DAY 120	147</	

DATE	DAY OF DIE	TIME	TEMP	PULSE	RESPIR	STOOLS
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abscess wall, and found a few scattered amœbæ. These amœbæ were of somewhat smaller size than the so-called *Entamoeba histolytica* of dysentery, and, though they moved freely, no distinction of ecto- and endo-plasm could be discovered. The finely granular endoplasm was continued up to the extreme outer margins of the pseudopodia, when those existed. No red blood cells were included in the amœbæ. The following day amœbæ of the same characters were again found, but on the 19th the character of the amœbæ had entirely changed and large amœbæ with clear ectoplasm and granular, red blood cell, containing endoplasm, were abundant. These were found for the remaining two or three days, the man was allowed by his friends to remain in hospital.

Unfortunately the urethral discharge was not examined for the presence of amœbæ. The case seems to me of interest as it will lend support to several theories concerning the relations of amœbæ to liver abscess, the occurrence of liver abscess in the absence of bowel disorder and the relationship of the several amœbæ found living in association with human beings.

A FATAL CASE OF HÆMORRHAGE INTO THE PANCREAS

By E A C MATTHEWS, M B (CANTAB)

MAJOR, I M S,

10th Lancers, Jullundur

THE following case may be of interest on account of the rarity of the affection, the extreme difficulty of diagnosis, and the rapidity of the fatal result—

B P, Mahomedan female, wife of a khitmatgar, age about 22 years.

History of the illness—The husband stated that she had always enjoyed perfect health until about 4 P M, on February 6th, when she complained of sudden and severe pain in the upper part of the abdomen, and became faint, but did not lose consciousness, she did not vomit or complain of nausea, the pain did not appear to be agonizing at any time, and she improved during the early part of the night. About 1 A M she asked for some tea which was given her, but an hour or two later she again became faint and complained of pain, and by 6 A M was unconscious.

Condition when seen—I saw her about noon on February 7th, she was a well-made sturdy woman, temp 97.8, skin cold and damp, unconscious, pulse alternating about every 30 seconds or so between normal rate and fulness and small, rapid and flickering, the latter condition being coincident with a long-drawn wail at inspiration. Beyond these vague symptoms there was nothing

to be made out, the abdomen was neither distended nor tympanitic, and the chest was normal.

She was taken to the Cantonment Hospital, but died about 4 P M with no further symptoms and apparently from heart failure, 24 hours after the onset of the complaint.

Post-mortem—The abdominal organs were all normal with the exception of the pancreas, in the head of which was a recent hæmorrhage about the size of a walnut, with several small superficial hæmorrhages over the body of the organ, there was no appearance of the fat necrosis or signs of inflammation or disease in the pancreas or any of the abdominal organs, there were no gall-stones, the uterus was nulliparous.

Remarks—The case requires little further comment except that it is not quite typical of this rare affection, for usually the patient is a male, nausea and vomiting are nearly always associated with it and there is generally marked distension of the abdomen.

There was absolutely nothing to account for the hæmorrhage or its disastrous result.

BULLET WOUND OF THE LOWER END OF THE FEMUR DEATH FROM HÆMORRHAGE FROM THE POPLITEAL ARTERY NINE DAYS LATER

By W H THORNELY,

MAJOR, I M S,

Civil Surgeon, Arrah

HINDU, male, aged 24, was shot through the lower end of the femur by a round bullet from a 12-bore gun, at a distance believed to be between 100 and 150 yards.

He was brought to the Arrah Hospital on the following day. Condition found—Entrance wound $\frac{3}{4}$ by $\frac{1}{2}$ inch near the upper and inner border of the right patella. Exit wound 1 by $\frac{1}{2}$ inch behind about the same level internal to the middle line of the popliteal space. General condition fair. Anterior tibia pulse equal on both sides. Wounds were cleansed and leg put on a splint. The following day the wounds were opened up and some loose fragments of bone from the internal condyle of the femur removed.

The patient was apparently doing well, despite symptoms of slight local infection of the knee-joint until the ninth day, when there was a severe hæmorrhage from the wounds. A rubber cord was at once applied to the thigh, but the patient died from the hæmorrhage.

Post-mortem examination showed a tunnelled fracture of the internal condyle of the femur, corresponding in bore with the size of a 12-bore shot gun bullet, radiating fractures running up into the shaft and down to the articular surface of the femur, and a small ulcerated opening in

the popliteal artery. A little pus in the knee-joint and adjacent muscles.

A fragment of bone had probably caused the injury to the artery at the time of the impact of the bullet and the injured area had gradually ulcerated through.

I should like to know whether there are any means of diagnosing an injury of this nature.

CASE OF MOLLUSCUM FIBROSUM WITH DEFINITE FAMILY HISTORY

By H. B. STEEN, M.D.,

Captain, I.M.S.,

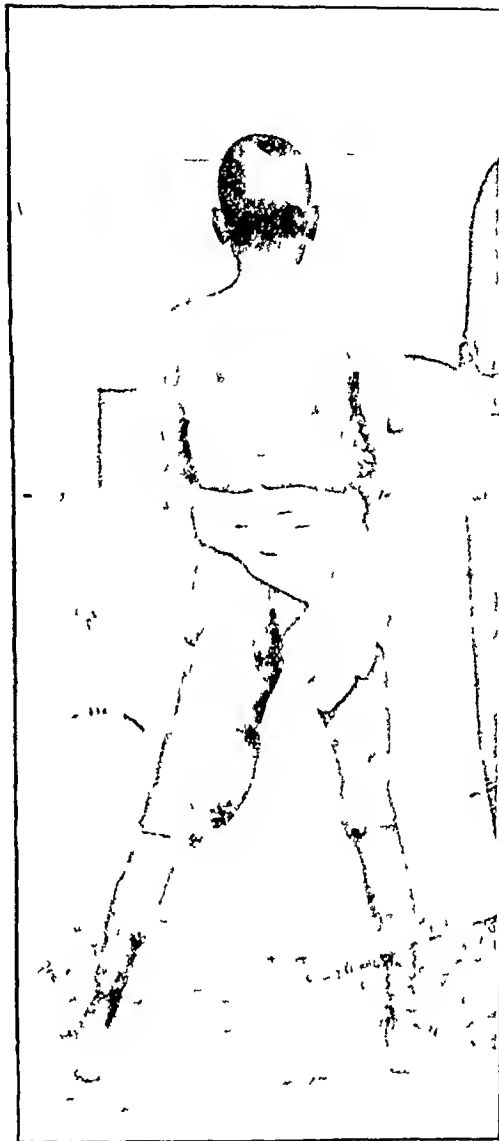
1st Resident Surgeon, Presidency General Hospital,
Calcutta

U, Hindu male age 12 years, was admitted to Behampore Hospital on the 25th January 1911



suffering from a large growth involving the thigh and smaller growths over different parts of

the body. I enclose two photographs which give a fair idea of the condition. A small piece of the growth was removed. Microscopic examination showed it to be composed of fibrous tissue.



The following is the family history —

One grandmother had 10 or 12 similar swellings. His father was also affected, the growths were larger than on the boy. The disease started at 12 years. One uncle, who accompanied the boy to hospital, was seen to have multiple small similar growths on the back, arms, forehead and buttocks.

One sister was affected at 12 years of age. Her axilla is the part attacked, also her scalp.

Two brothers are, up to date, free of disease.

The inguinal glands on both sides were enlarged. I report the case on account of the family history. Captain Scott, I.M.S., reported another case with a similar history of heredity in the *I M G* of November 1911.

Indian Medical Gazette

OCTOBER

THE PERISTALTIC HORMONE

HORMONAL, or the peristaltic hormone, is a substance of the greatest interest, both from a physiological point of view and on account of its practical action. It is a normal secretion of the duodenal and gastric mucous membrane under acid stimulation, that, entering the general circulation, is perhaps stored up in the spleen and serves as an exciter of peristaltic contraction. It is made use of clinically in 20 ccm doses which can either be given hypodermically or intravenously. During the first two or three years of its use it was reported to have no special deleterious effects beyond a little malaise, chilliness or rise of temperature, and, in particular, experimentation showed that it was not subject to the inconveniences of anaphylaxis.

On animals the effects of intravenous injection are almost instantaneous, the paralysed, motionless intestinal coils of a rabbit begin to show normal peristaltic action the moment an injection of hormonal is made into the marginal vein of the animal's ear. With man its action is not quite so rapid, its effects usually taking place in from one to five hours after injection.

Clinically this substance has been tested by both physicians and surgeons. The former have had recourse to it in the disorder that they encounter at every turn in life, chronic constipation. Two important points have been observed: one, that in a fairly large proportion of cases hormonal appears to have no action whatever—this may be due to non-suitability of the case or to variation in the preparation, which is, by no means, a well-defined product, but merely an extract of various organs, the other, that in cases where it does act successfully, the results are almost brilliant, as one injection will suffice to put the patient on the right track for years. The physicians whose experience with it is greatest in chronic constipation, say, that its effect can almost be foretold. In the purely atonic form success is practically certain, and stools become regular after a single injection, whereas in the spasmodic forms, or in constipation of mechanical origin, adhesions, pressure, etc., no good result will be obtained.

In surgical practice the hormonal injections have been used with three classes of patients

intestinal paralysis after ordinary, non-complicated operations without suspicion of infection or peritonitis, in intestinal paralysis following septic peritonitis, and in distended abdomen that may or may not be due to mechanical obstruction. Here, again, the results obtained have varied according to the category. In the first class of case the results have in quite a number of cases been most satisfactory, regular peristalsis reappearing within a comparatively brief period after the administration of an intra-venous injection, even the second class derive some benefit.

When the gravity of these cases of post-operative intestinal distension and the difficulty of successfully dealing with them are taken into consideration, the brilliant results of hormone therapy led the profession in Germany to congratulate itself on the acquisition of a new and really valuable addition to our therapeutic armamentarium. This pleasure was all the greater as everyone believed in the absolute harmlessness of the injections.

But just when the problem of perpetual motion appeared to have been finally solved, there comes a killing frost and the reverse side of the picture has now begun to be reported. Three cases of severe cardiac collapse have occurred in patients injected for intestinal paralysis.

The collapse is accompanied by a considerable fall in arterial pressure, unconsciousness, rise of temperature, dilated pupils, clonic spasms of the body and limbs, deep, slow and interrupted breathing, the colour of the face and lips, however, remained normal. All the patients recovered with free stimulation and the results of the hormonal injections were satisfactory, notwithstanding the collapse.

The moral the Paris correspondent of the *Boston Medical and Surgical Journal* draws from this latest intravenous injection of an ill-defined organic product is, that we are to be very prudent in the use of these new remedies. The whole of the chapter is so obscure, so entirely in its infancy, that it is unjust to others to take up with precipitancy and apply to our fellow-beings remedies that have been insufficiently treated, and that we probably would refuse to have administered to ourselves. While this point of view is very correct, and the fact that unpleasant consequences may sometimes accompany the exhibition of these forms of remedies should not be forgotten, still without

some experimentation no advance in treatment is possible. We need not quote examples of remedies that are not wholly devoid of certain risks, many such will readily occur to most minds, yet despite those risks they are abundantly made use of with the most gratifying results to both patient and physician. The preparation of the hormone at present is only in the experimental stage, and probably before long it will be possible to obtain the pure hormonal substance free from extraneous organic matter. As is well known extracts of different organs or of animal tissues will cause a fall in arterial tension and be accompanied by very unpleasant consequences, and, from the evidence so far collected, the collapse following on intravenous injections of this hormone would appear to be largely the result of contamination of the extract with animal organic matter. A parallel condition was met with in the old Pasternian method of inoculation against rabies, the injection of a certain amount of spinal cord containing organic matter caused a distinct fall in blood-pressure and was accompanied sometimes by alarming symptoms, whilst, with the new dilution method, where the amount of animal tissue injected per dose is infinitesimal, the symptoms experienced by the patient are trifling, and the blood tension remains practically normal.

THE PREVENTION OF PERNICIOUS MALARIA.

JAMES of the Ancon Hospital, Canal Zone, Panama, publishes a most suggestive article on the above subject in *The Journal of Tropical Medicine and Hygiene*. After defining what he means by pernicious malaria as "a certain symptom or symptom-complex which manifests itself to such an extent that life is endangered," he goes on to discuss the condition of the blood in cases likely to be of the pernicious type. He looks on an infection of 200,000 parasites per cmm with suspicion, particularly if doubly infected erythrocytes are present in the proportion of 5 per cent or more of the total of the infected cells.

In the paper referred to the author tries to limit himself to the treatment of the pernicious types of malaria that cause death on account of —

(a) The blocking of the capillaries by the parasite-infected erythrocytes, and

(b) The simultaneous sporulation of parasites in numbers sufficient to overwhelm the organism with the toxin thus liberated.

So far as can be seen from a consideration of the principles he teaches this limitation is artificial, and the undoubtedly important method of medication he advocates applies to the treatment of all forms of malaria where administration by the mouth is likely to fail. Failure of quinine by oral administration is well-known to occur in many cases of malaria where the infection may not be very severe, the absorptive condition of the alimentary canal playing a most important part in determining the effects of quinine given in this manner.

After having given a fair trial to all the usual methods of quinine exhibition, it was found that pernicious symptoms not infrequently developed. The author goes on to discuss the use of the hypodermic method as follows —

But until recently we were at a loss for a method whereby more quinine might be quickly directed against the parasites. The rate of absorption from hypodermic injections of the usual dilution of 1:2 or 1:3 was recognized to be slower than from any other methods of giving the drug, nausea and vomiting in many of these cases precluded oral administration, and intravenous injection after the method of Bacelli in dilutions of 1:10 (1 gm to 10 cc) we found to be dangerous and not satisfactory. I have witnessed two deaths that followed immediately the injection of quinine according to this method, when the dose, dilution, and manner of administration recommended by Bacelli were carefully observed, and an embolism could be excluded. Even when larger doses were given by mouth or hypodermically, or both, at the beginning of the cycle, fatalities have followed. The reason for the want of success in such instances has appeared to me to be due to failure on the part of the organism to absorb properly and so transmit to the bloodstream the necessary amount of quinine to inhibit sufficiently the growth of the parasites. I have observed, in smears taken from the placenta in cases of abortion during a moderately acute malarial attack, that the adult parasites were much deformed, and sporulation was irregular and incomplete, when only ten grains of quinine three times per day had been exhibited for two days preceding the abortion. Such smears have a great advantage over autopsy preparations, in that they demonstrate

the true appearance of adult parasites in the internal circulation

Although I am aware that the parasites in certain infections are much more resistant to the action of quinine than are those in others, and that in the same infection there are plasmodia which appear to be unharmed when the others are much damaged, it is my belief that if enough quinine can be thrown into the circulation at the beginning of the cycle, the very young parasites will be so affected that the subsequent paroxysm may be in great part aborted

The failure of large doses of quinine administered by the usual methods to prevent the onset of pernicious malaria, Dr James believes has been adequately explained by the experiments of Captain MacGilchrist, I.M.S. MacGilchrist has shown that even those salts of quinine, most soluble in water, are not miscible with blood serum. When mixed with blood serum in strengths commonly employed for hypodermic administration, the quinine salts in a few minutes produce a solid gelatinous mass. The greater the dilution of the quinine salts, the less the deposit that occurs on mixing with blood serum. From experiments on animals MacGilchrist places the absorbability of quinine by the several modes of administration in the following order: (1) Subcutaneous injection in extreme dilution (1 in 150), (2) oral administration during fasting, (3) oral administration with, or immediately after, food, subcutaneous injection in the strengths generally used for that method (1 in 2 and 1 in 8). MacGilchrist goes on to say that subcutaneous injection in extreme dilution cannot, for clinical reasons, be employed, and, indeed, that quinine and its salts are fundamentally unsuited for hypodermic use.

Basing his further work on MacGilchrist's observations, Dr James began to make use of the hypodermic method in extreme dilutions with seemingly marked success. He states —

After reading the observations of Captain MacGilchrist, I was firmly convinced that the failure of quinine in large doses in certain cases in which the drug had been administered early in the cycle was due to improper administration. Either the assimilation of the alkaloid or its salts from the intestinal tract was impaired by reason of the infection, or the conditions described as occurring at the site of the injection were sufficient to prevent the proper absorption

In fact, it is no more than reasonable to suppose that when quinine is given hypodermically, less of the drug is quickly absorbed from large doses than from small ones, since the coagulum, with resulting tissue irritation, would be more readily handled by the body tissues and the lymphatics when small doses are given, a circumstance that perhaps would explain why the larger doses have not been more effective than the smaller.

I must, however, take exception to Captain MacGilchrist's statement that "for clinical reasons, subcutaneous injection in extreme dilution cannot, of course, be employed." It is because quinine can be given in this way with no more discomfort to the patient than by the hypodermic method, and with far quicker and better results, that I place this preliminary report before physicians in the malarial countries for their consideration.

With the consent of Dr W. E. Deeks, Chief of Medical Clinic in Ancon Hospital, I determined to try the subcutaneous administration of quinine as a preventive measure in intense infections, beginning with somewhat smaller dilutions than 1 to 150, and working up to that strength, and at the same time to use large doses. I have since used this method in twelve cases, giving 30 to 45 gr. as the initial dose, and repeating the doses in equal amounts or less at intervals of four to eight hours, according to the severity of the infection.

In four of these cases at the time of admission of the patient a very great number of young parasites, with segmenting forms and multiple infected erythrocytes, was found in the peripheral blood. In six cases there were heavy infections with young plasmodia, and quite a number of doubly and trebly infected red-blood cells. In two cases moderate infections with tertian parasites were found, but in one the patient was delirious, and in the other comatose.

From the results of this line of treatment Dr James argues that the method of giving quinine early in severe infections, subcutaneously or by intravenous injections, in dilutions of 1 to 150, or greater in intravenous injections, is logical and practical.

The infusion is rapidly taken up, most of it in two hours, and though sometimes painful, it is no more so than are hypodermic injections. It is not followed by any permanent induration. A little cocaine injected before hand will effectually prevent any subsequent pain.

The method is a correct therapeutical measure, for normal saline so administered is beneficial in any toxic condition, effecting, as it does on absorption, a dilution of the toxic substances in proportion to the quantity of saline made use of. This method of treating severe types of malarial disease is certainly worthy of a fair trial.

Current Topics.

THE POPULARITY OF "THE SERVICES"

In a modest single-page appendix to the minutes of the proceedings of the General Medical Council is printed a report by the Examination Committee of that body on the entrants into the Medical Services of the Crown. This report discloses a state of affairs which cannot be called satisfactory, for it reveals that for 119 vacancies in the Naval Medical Service, Army Medical Service, and Indian Medical Service during the year there were but 137 candidates. A few years ago various steps were taken to increase the popularity of these important Services, and for a time competition to enter them was quite brisk. But it seems as if somehow this popularity has waned, which is not only undesirable in itself, but is also detrimental to the efficiency of the armed forces of the nation. The Navy still maintains a certain measure of popularity, for twenty-one vacancies there were thirty-seven candidates, so a good choice was available. But the Royal Army Medical Corps was compelled to accept every single one of the seventy-one candidates who applied, and the once-favourite Indian Medical Service had but twenty-nine men among whom to award twenty-seven commissions.

It is thus evident that the land forces are failing dismally to attract towards their Medical Services a sufficient number of young doctors, and it is inevitable that with competition so restricted a number of men who are properly ineligible must obtain admission. What the causes of this serious state of affairs may be, it should be the duty of the War Office and the India Office to ascertain without delay. When these causes, which now threaten to interfere gravely with the efficiency of the Services, have been discovered every possible means of removing them should be adopted. To judge by the trend of general opinion in Anglo-Indian circles, one of the root-causes most detrimental to the attractiveness of the Indian Medical Service is the policy in high quarters of encouraging the influx of native Indians into its commissioned ranks. Whether this is or is not the case, the Secretary of State for India may well have his attention drawn to the most disquieting

evidences of lost popularity which the figures we have quoted afford.

Of the Naval Medical Service there is less need for investigation, for the proportion of candidates to vacancies is still high enough. But the Royal Army Medical Corps is in a bad way, for it is clear that it is failing to attract anything like the number of would-be entrants to ensure a sufficiently lofty standard of professional and military attainments. Within the last ten years the character and standing of the men entering this Service have been in general excellent, for the falling popularity of the Indian Service brought many recruits of the right sort to the British Service. It is evident, therefore, that these officers are, in the main, dissatisfied with their positions and prospects, and are advising their friends to avoid the same fate. It must be the care of the War Office authorities to consider very carefully the remedy for this, and having discovered it to apply it at once. They cannot and must not be allowed to remain supine in face of the present situation, but must tackle it in earnest without any delay. Indeed, for our part, we consider they have been blameworthy for allowing matters to drift to this discreditable crisis, and it is for them to redeem the confidence reposed in them as speedily as possible. Only by vigorous action can they regain the confidence of the public and the profession in regard to the Medical Services. Without such confidence there can be no question of popularity.—(*The Hospital*, July, 1912)

THE PASTEUR INSTITUTE OF INDIA

THE work of this Institute continues to increase, the number of individuals treated during 1911 was 2,268, an increase of 195 over the corresponding figures for 1910. The European element has fallen during the year from 354 to 297.

Large as these figures are the Director—Major W. F. Harvey, I.M.S.—estimates that considerably less than one-half of those bitten by the same rabid animal present themselves for treatment. Of the total number treated 43 died of hydrophobia, 12 developed the disease within the limits of the course of treatment, 17 within 15 days after the end of that course, and 14 still later than 15 days. It is only the last class that can be reckoned as "failures" of treatment, the percentage of which is 0.6 per cent.

Tables are given of great interest, showing the varying results obtaining according to the locality, number of wounds, application of caustic or the interposition of clothing. It is generally accepted that bites on the face are more dangerous than those on other localities, but it is pointed out that bites on the face are very usually accompanied by bites on other parts, and that an animal that reaches the face of an individual is usually a specially ferocious and aggressive one and one likely to inflict deep

bites Further the face is specially vulnerable in several ways, it is less likely to be thoroughly canterized, it is usually devoid of clothing, the skin of the face is thin and easily penetrated, it is close to the brain and the nerve path to be traversed by the virus is short, so that the incubation period is lessened and the chance of escape by means of treatment is diminished

Besides the anti-rabic work a large amount of laboratory examinations have been carried out by the staff during the year—over a thousand different investigations of blood, sputum, tumours, etc., being performed

THE EFFECTS OF TROPICAL SUNLIGHT

FREER in the *Philippine Journal of Science* has a most interesting article on the above subject. He concludes from investigations extending over two years that a climate, such as that of the Philippine Islands, is not by any means deleterious to the white man, if he takes ordinary precaution which are not as elaborate as those he would take in a northern climate to keep out the cold. The individuals need only to seek the shade to avoid any deleterious results from even the greatest insolation. If exposure to the sun is necessary, as is the case with troops on the march, adequate protection is afforded by light, preferably white, clothing and helmets. Perspiration is a great factor in keeping a man normal under the conditions that obtain in the tropics. Many of the untoward effects attributed to the sun are probably due to the rapid loss of water from the system and could be avoided if the individual were in a position to drink enough to preserve the fluid equilibrium of the body.

The figures given for the blood-pressure are of interest and show that Americans in the Philippines maintain their arterial tension at practically the same level as that met with in temperate climates. This finding is in agreement with what was found to be the case with Europeans in Bengal, where the temperature, and particularly the humidity, are on a much higher scale than obtains in the Philippines.

THE BOMBAY HEALTH OFFICER'S REPORT

THE Executive Health Officer's Report—Dr Turner's—for the year 1911 is beautifully got up and reflects the greatest credit on all concerned. The diagrams, made use of to illustrate mortality rates from different causes, the incidence of plague, the relationship of rat plague to human plague, etc., are exceedingly good.

The report is very exhaustive, and gives details of practically every thing connected with the health of the people of Bombay.

We were particularly interested in the work done in connection with fevers. There is a fall

from an average of 4,039 for the years 1901—1910 to 3,146 for 1911 in the deaths from fever, of which malaria only accounts for 334. The recommendations put forward in Dr Bentley's report on malaria in Bombay are being carried out as far as is possible, and more powers are being asked for to enable the executive to deal with the thorough extermination of malaria in Bombay. The report is a model of what a good report should be.

THE CLINICAL SIGNIFICANCE OF ACIDOSIS IN PREGNANCY

THE occurrence of acidosis has, for some time, been recognized as a phenomenon connected with the special toxæmias of pregnancy. The term is used to express an alteration in the ammonia-urea nitrogen ratio in the urine, accompanied by the presence of acetone, diacetic acid and B-oxy-butyric acid.

Leith Murray in dealing with the 'Toxæmias of Pregnancy' alludes to the occurrence of acidosis in cases of vomiting of pregnancy and in eclampsia, and states that these two forms of pregnancy toxæmia while not necessarily due to the same toxin, are probably due to the same type of toxin.

Swayne in the *Proceedings of the Royal Society of Medicine* attempts to outline a clinical method of determining the extent of acidosis in those suffering from this condition complicating pregnancy. He lays great stress, and rightly so, on the fact that the occurrence of albuminuria in a pregnant woman is one of the signs of the presence of a pregnancy toxæmia, but that neither the mere detection of albumen in the urine nor its quantitative estimation is sufficient.

If albumen is found the daily output of urea should be estimated, and, if acidosis is shown to be present by a positive reaction with ferric chloride for diacetic acid, the urea ammonia nitrogen ratio should be worked out.

This is simply done by estimating the urea by a reliable method and then determining the amount of free ammonia in the 24 hours' sample. The process can be carried out in a few hours in any ordinary well-equipped laboratory. As is well-known, theoretically, the normal percentage of the total nitrogen of the urine should be about 87 per cent and only a very small amount of ammonia should be excreted as such under normal conditions. In acidosis, however, the percentage of urea falls considerably and the ammonia content of the urine rises proportionally, owing to large quantities of ammonia being made use of to neutralize the acids formed in the system. This rise in the ammonia nitrogen accompanying a fall in the urea nitrogen is a sign of acidosis and is to be considered an indication for the termination of pregnancy in cases of severe vomiting and also in cases of albuminuria. Of course proper precautions must

be taken to ensure that the urine is not undergoing ammoniacal decomposition. As chloroform is liable in itself to cause acidosis, its administration should be avoided in cases of acidosis and eclampsia.

ENUCLEATION OF THE TONSILS

DR DAN MCKENZIE delivered a most interesting and instructive lecture on the above subject at the Post Graduates' College and Polyclinic, an account of which will be found in the December number of the *Clinical Journal*. The lecturer pointed out that criticisms have been levelled at tonsillotomy as being an incomplete and ineffective procedure, and that a movement of opinion in favour of the entire removal of the tonsil in its capsule—enucleation or tonsillectomy—is growing in strength all over the surgical world, which bids fair to relegate the partial operation to the limbo of the effete and old-fashioned. In discussing the question of tonsillotomy *versus* tonsillectomy Dr McKenzie points out that—

Removal of the tonsils has usually been regarded as the same kind of operation as removal of adenoids. It is true that both operations are often performed at the same time. But when we come to analyse our reasons for the operations we discover a curious inconsistency in our behaviour which is rather difficult to defend. We generally operate on adenoids in order to remove an impediment to respiration. But this is not the sole reason for removing adenoids. Nor, indeed, is it always the prime reason. For the presence of adenoids exposes the patient to frequently recurring attacks of septic infection—"catching cold," "catarrh,"—which may lead to suppuration in the ear, bronchitis and many other troubles. Now, experience has shown us that nothing less than the obliteration of the adenoid masses in the naso-pharynx is needed to eradicate for all time this tendency to recurrent sepsis. Consequently we are careful to make our adenoid operation as radical as possible. And this decision is strengthened by the knowledge that incomplete removal of the adenoid vegetations favours their re-appearance. When, however, we turn to the tonsil operation, as hitherto practised, an unaccountable discrepancy appears in our practice. In spite of the well known fact that the tonsils, by reason of their proximity to the ever septic buccal cavity are really more liable to acute infections than adenoids, in spite of the fact that chronic septic absorption from enlarged tonsils is the rule, as an examination of the lymphatic glands at the angle of the jaw will show, in spite of the fact that partially removed tonsils not infrequently enlarge again, all that we do is to slice off that part of the tonsil which projects beyond the edge of the faucial pillars, leaving the buried stump behind untouched.

In short, the reasons for entirely removing tonsils are actually stronger than the reasons for entirely removing adenoids. And yet, although we deal radically with the adenoids we only deal half heartedly with tonsils. Surely a grave inconsistency!

Logic, then, forces us to admit that the sole operation worthy of modern surgery is enucleation or tonsillectomy.

This is a strong statement, though not a bold statement in view of the trend of recent opinion to which I have already alluded. But as a statement of the position it is open to some qualification. In comparing the tonsil operation with the adenoid operation we must go a step further before we can look upon our present action of the argument as complete. A radical adenoid

operation is no more difficult and no more serious than an incomplete adenoid operation, but, on the other hand, tonsillectomy is necessarily more serious than tonsillotomy. When we enucleate a tonsil the wound we inflict is deeper, and therefore more open to serious infection than that left after slicing a tonsil through. Moreover, the defenders of the partial tonsil operation can point to thousands of patients who have never required any further attention after one simple tonsillotomy.

After carefully weighing the evidence for and against the two operations, as routine procedures, Dr McKenzie believes the weight of argument is in favour of the radical operation. He then points out the varieties of tonsillar disease in which there is no choice and in which tonsillotomy is futile and tonsillectomy imperative. These are—

(1) When the patient has been the subject of attacks of lacunar tonsillitis or peritonsillar abscess (quinsy), both of them acute septic infections, or when chronic septic states have caused symptoms of systematic troubles such as rheumatism, then nothing less than enucleation will ensure a cessation of the trouble. Tonsillotomy is useless.

(2) When the tonsils are buried deep within the faucial folds enucleation is preferable, because the tonsillotome cannot reach the ultimate depths of the gland, and may, indeed, only shave off the surface.

(3) When a person is suffering from tuberculous cervical glands the tonsils should be enucleated, even if they are not enlarged, because it has been shown that in these cases the tonsils frequently share in the tuberculous disease, and that they are then smaller than normal.

(4) When tonsils have been previously operated on and have "grown again," as the popular saying is, we must enucleate if we wish to spare our patient the ordeal of one or more subsequent operations. According to Seccombe Hett, the germinal layer of tonsillar tissue lies close to the capsule, and it is, therefore, unaffected by operations which merely slice through the gland.

(5) In what may be called the "irritable tonsil" of adults, which is often associated with chronic pharyngeal catarrh, enucleation is called for.

The paper gives a full description of the operation, discusses the possible sources of trouble both during and after operation, and shows how they can be successfully overcome.

SALVARSAN IN SYPHILIS OF HEART OR VESSELS

WEINTRAUD gives in tabulated form the details of thirty eight cases of syphilitic cardiovascular disease in which he gave salvarsan. Ehrlich has warned against administering salvarsan when the heart or vessels are below par for any reason, but Weintraud has never had any mishaps from this. The youngest patient in whom the syphilitic aortitis was diagnosed was thirty years old, and the intervals since infection ranged from three to forty years. All have been in comparatively good health since the injection of salvarsan, except one who has died recently from cerebral hæmorrhage.—*John A M A, The Clinical Journal etc.*

TREATMENT OF ARTERIO-SCLEROSIS

DR SWAN in the *New York State Journal of Medicine* discusses this most interesting subject.

The treatment of the condition by drug is notoriously unsatisfactory, and he has arrived at the conclusion that other methods give more relief than can be obtained by medicine. Perhaps the best results are produced by a judicious combination of physiological methods and drugs. The physiological methods that have been recommended in the treatment of this disease are —

(1) Rest combined with massage

(2) Diet

(3) Hydrotherapy—the hot full bath, the tepid or neutral full bath, and carbonated mine (Nauheim) baths

(4) Thermotherapy the electric light bath, the vapour cabinet bath, and the Russian bath

(5) Electricity, galvanism, faradism, high frequency electricity (auto-condensation and ultra violet rays) and the crown breeze

These measures have merely a symptomatic effect and in no way serve to cure the disease. The conclusions arrived at by Dr. Swan after an extensive trial of the different methods are —

1 Rest in bed with massage daily is capable of producing a marked reduction in the blood-pressure of the patient suffering from arterio-sclerosis

2 The important details of the diet for patients with arterio-sclerosis are first, to reduce the total amount of food, second, to reduce the amount of protein in the dietary, third, to limit the amount of fluid ingested

3 Measures that will produce sweating, hot baths with blanket packs, Russian baths, vapour cabinet baths, and electric light baths are capable of reducing the blood-pressure and ameliorating the symptoms in cases of arterio-sclerosis with high blood-pressure

4 In thin patients the severer forms of treatment may be replaced by the administration of a neutral full bath of either fresh or salt water

5 Carbonated mine (Nauheim) baths should not be given in cases of arterio-sclerosis with high blood-pressure, particularly when there are indications of nephritis

6 Faradism, galvanism, and the high frequency current applied to the skin through a vacuum tube are valuable in relieving anæsthesias, hyperæsthesias, and the paræsthesias which are met with in cases of arterio-sclerosis

7 Auto-condensation may reduce blood-pressure, but the treatment should be given with great care

8 The crown breeze, particularly if administered at bed-time, is capable of relieving insomnia in some cases

NORMAL URINE

LONG (Journ. Amer. Med. Assoc., March 16th), in an article on "The Definition of Normal Urine," says —

In attempting to define a normal urine the greatest importance attaches to those substances which are usually regarded as pathologic, but which may in reality be al-

ways present in small amount. We have here, especially, traces of sugars, albumen and certain forms of casts. By the use of very delicate reagents it is possible to detect what must be considered as an albumen in all normal urines. I believe that authorities in general now regard that point as settled, but, limiting ourselves to the use of the common tests for albumen as clinically applied, it is still true that a very considerable number of urines from healthy individuals show traces of albumen which may be recognised by the nitric acid ring, or by heating after the addition of a trace of acetic acid, or enough to acidify. It has often been pointed out that soldiers on long marches, or athletes after strenuous exercise, very frequently void urine showing a little albumen, but it is not so generally recognised that in apparently normal men at ordinary pursuits the occurrence of albumen is by no means rare. The recognition of this fact is of importance, and by over-looking it grave mistakes have been made. It is not sufficient to say, as some authorities have said, that any urine showing albumen is pathologic, since such simple factors as diet and posture may sometimes give rise to its presence.

The same thing may be said of hyaline and certain other forms of casts. At one time, and not so long ago, their appearance was looked on as a gravely pathologic indication, but in recent years the situation has greatly changed, and largely because the means of examination are now much more perfect. Before the introduction of the centrifuge urines were allowed to stand some hours, or even a day, before testing in order to let them settle. In this interval bacterial action frequently destroyed every vestige of a cast, and even when this did not happen the sedimentation was at best imperfect. In either event casts were rarely found except when very abundant. With our present, properly speeded centrifuges it is possible to secure practically complete sedimentation and make the examination in a few minutes. Under these conditions we find the casts where before they would have been overlooked.

During the past ten years it has been my custom to require from the members of one of my classes frequent examinations of their own urine. These tests have given some interesting results which may be illustrated by the data tabulated during the last school year by one of my students, Mr. J. W. Boen. Examinations were carried out on the urines of 40 men, who from the usual physical examination and history might be considered as in normal health. In each case ten tests were made in two weeks, and if no albumen was found the examinations were dropped. Following an appearance of albumen the tests were kept up to get some idea of frequency and conditions of occurrence. In some cases nearly 100 tests were made, the examinations lasting through three months. In all, 1,042 examinations were made on the forty men, an average of twenty six to each man. Casts were found in 65 per cent of all the urines examined, and in 62.5 per cent of all the men. Corresponding to modern experience, but in conflict with the older view, albumen is much less frequently found than are casts. In this work albumen was found in six of the 40 cases, or 15 per cent against 62.5. In four of these men the albumen was very rarely found, while the occurrence was frequent with the other two. In one of them the morning urine was free from albumen, but appeared about noon, after the man had stood two or three hours at a laboratory table. With the other man the albumen was found occasionally in the morning, but very frequently after his work in the laboratory in standing posture. We have here evidently two cases of the orthostatic type, which is not exactly uncommon. These men were under observation a year before the tests were made and have been watched since. They appear to be in good condition in other respects, but what may develop later cannot be foretold. Such cases suggest the desirability of keeping long records, through years if necessary, of urines about which there is any suspicion concerning the occurrence of albumen. The records kept by some life insurance companies have value in this regard.

As it is hard to draw the line in the question of the traces of albumen in urine, so it is almost equally puzzling to reach a sharp conclusion concerning the meaning of sugar present. All urines show a so called normal reduction, which is variable in extent from individual to individual. I have had observations made on the urines of all men in large classes for years back and find a rather wide range in this reducing power. Several substances besides the carbohydrates, specially creatinin and uric acid, are factors in the reduction, but when the effect of these is eliminated the fraction which must be charged to the sugar body is sometimes large enough to be difficult of interpretation. The condition may be normal, or it may suggest incipient diabetes. Here longer and systematic observations are necessary as with the albumen—*Australian Medical Journal*

TREATMENT BY ISOTONISED SEA WATER AT THE QUINTON POLYCLINIC

DURING the summer of 1911 much interest and also some criticism were evoked by the foundation—for the first time in England—of a public Institution specialised for the therapeutic use of Isotonised Sea-Water. The interest was such as to induce the visits of State Administrators, many Officers of Public Health, and a constant influx of the members of the Medical Profession. So far as was compatible with the heavy work of the Medical Staff the finest opportunities were given for prolonged and repeated observations of the cases and their treatment. During the epidemic of gastro-enteritis as many as 150 cases per diem not infrequently presented themselves for treatment, in all grades of severity, many in *extremis*. Much appreciation and some disparagement on the part of medical observers and others ensued, and the Medical Staff felt that some at least of the acidulous criticism was passed on a casual inspection of the cases and an imperfect acquaintance with the methods of treatment. Our experience and the results alike at the Poland Street and Paris Clinics, justified the Medical Staff in inviting the Profession in general to postpone its judgment on the ultimate results until the statistical account of the cases could be published.

The theory of the use of Isotonised Sea-Water as a therapeutic measure is based on the ascertained parallelism between the saline constituents of Sea-Water made isotonic, and the inorganic elements of the blood and tissue fluids of the vertebrates. To Monsieur Quinton of Paris is due in the first instance the credit of demonstrating this parallelism in his work, "L'Eau de Mer." On this basis the remedial powers of Isotonised Sea-Water have been worked out, chiefly in Paris. Quinton's primary research work lay in the determination of the saline concentration of the primordial life-bearing seas at 0.8 per cent. Confirming that the earliest manifestations of life were marine, he drew attention to the persistence of this degree of saline concentration in the circulating fluid through the chain of animal life up to the vertebrates of the present day.

Qualitative parallelism between the mineral constituents of Sea-Water and the mineral constituents of the blood and tissue fluids has demonstrated to extend, not merely to the salts present in bulk, but also to those more numerous existing in apparently infinitesimal quantity. Quantitatively, the degree of saline concentration of vertebrate blood remains approximately at 0.8 per cent, i.e., saline concentration of the fluid which supplies the cellular structure of the nineteenth century organisms is identical with the saline concentration in which primordial organisms flourished. The difference between the old time and present Sea-Water is in its saline concentration. If the complex solution of a certain saline concentration known as Sea-Water exercised a favourable influence upon cell life then, why not similar fluid of a similar saline concentration now?

The question was put to the test, and the results came out as expected. Uncontaminated Sea-Water made isotonic with the blood in man, has a potent, far-reaching, and highly beneficial influence on the human body in many forms of disease. Isotonic Sea-Water is thus no mere laboratory preparation, but contains in solution, in minute quantities, such elements as Silicon, Fluorine, Iron, Gold, Iodine, Lithium, Phosphorus, etc., in a natural preparation, and in a form which has not been hitherto imitated artificially.

Much therapeutic work has been done in recent years with Isotonic—or in modern nomenclature, Isosmotic Solution of Chloride of Sodium, and the use of Isosmotic Sea-Water has been confused with that of Isosmotic Sodium Chloride solution, but the past description indicates the essential difference in composition between the simpler and the more complex solution. And although Sodium Chloride bulks most largely of all salts in the inorganic constituents of the blood, its solution does not contain those mineral constituents which are physiologically essential to the welfare of the body, and the use of Ringer's fluid is only an approximation to that totality of mineral constituents present in the blood and tissue fluids on the one hand, and in Sea-Water on the other.

For practical purposes Sea-Water is made isosmotic in order that it may be introduced subcutaneously without pain. When used intravenously its isosmotic concentration is of course advantageous, although the experience of Professor Leonard Rogers in Cholera has conclusively shown that saline solution double in strength to the isosmotic contents of the blood are tolerated in this disease without detriment. The purification of Sea-Water for injection into the tissues in quantity is a matter of considerable moment. Quinton's experiments have shown that sterilization by the usual method of boiling confers actual toxicity on the marine fluid that is treated, and his own method

of preparation includes, we understand filtration through Pasteur-Chamberland material. And in order to repeat the results of the Paris Clinic, we have preferred to adopt the material utilized by them.

Coming to the actual cases treated in the Poland Street Institution during the epidemic, they naturally range from the comparatively slight attacks of gastro-enteritis to those cases actually *in articulo* when sent. A considerable proportion of the cases were of the graver type, death having actually occurred in the waiting-room in the interval before consultation. A certain proportion of the infants was referred to the Institution by medical men as hopeless. Precisely in many of the graver cases the curative values of Isotonised Sea-Water were best demonstrated. It is useless to compute percentages in these cases from case-mortality only, segregation into grave, acute and mild cases is readily misleading. Therefore there is given in the text of the report a sufficient indication of the character of the clinical symptoms in all instances, and as a basis of comparison in general it may be noted that the epidemic in various provincial towns was of a very even character.

The details of the cases recorded in the text show that, in a very large proportion of the numbers treated, most favourable results were obtained—a few injections of from 50 to 250 c.c. of the Isotonised Sea-Water curing the disease in the majority of cases.

TREATMENT OF SNAKE BITE

COLONEL R. NEIL CAMPBELL, M.B., C.B., C.I.E., I.M.S., in his annual report on medical matters in Assam writes the following note on the above subject—

In 1911 only 14 cases of snake bites were treated with Dr Rogers' or Sir L. Branton's Lancet and permanganate of potash, *viz.*, 4 in the Lushai Hills, 3 in Sylhet, 2 each in the Khasi and Jaintia Hills and the Naga Hills and 1 each in Darrang, Goalpara, and Rangpur districts. Of these, 12 were males and two females and their ages varied from 14 to 50 years. In the two cases treated at Shillong in the Khasi and Jaintia Hills the snakes were identified by the Civil Surgeon as *Lachesis Monticola*, but they were very small, six and eight inches in length, and the punctures were only skin deep. In the remaining 12 cases in which the snakes were not identified the constitutional symptoms and local effects showed that in seven the snakes were probably non-poisonous in three slightly poisonous and in two poisonous (one deadly). Of these 14 cases treated, one died.

The treatment with incision by Rogers' Lancet and potassium permanganate applied locally, was apparently of use in some of the cases, but proved of no avail in a case supposed to be the bite of a cobra, though two ligatures were applied within three minutes and treatment with permanganate of potash begun in ten minutes according to the report.

I am of opinion that much good results from this method of treatment for snake bite, but the reports furnished are not dependable in many cases, as various details as to time between the bite and the application of a ligature, as also between the bite and commencement of treatment depend on guess work, the snake too is frequently not killed and, when killed, not recognised.

MEDICAL APPOINTMENTS TO THE COLONIAL OFFICE

The following changes have been made in the above appointments—

Sir Patrick Manson, M.D., K.C.M.G., F.R.S., will retire from the post of Medical Adviser to the Colonial Office in London on August 15.

It has been found necessary to divide the duties hitherto discharged by Sir Patrick Manson, and the Secretary of State for the Colonies has appointed Sir J. Rose Bradford, M.D., K.C.M.G., F.R.S., to be Senior Medical Adviser, and Mr C. W. Daniels, M.B., M.R.C.P., to be Junior Medical Adviser to the Colonial Office in London. These appointments will take effect from the date of Sir Patrick Manson's retirement.

The Secretary of State has also appointed Mr W. T. Prout, C.M.G., M.B., late Principal Medical Officer, Sierra Leone, to be Medical Adviser to the Colonial Office in Liverpool.

The King has been pleased to give directions for the appointment of Sir Patrick Manson, LL.D., M.D., F.R.S., K.C.M.G., Medical Officer to the Colonial Office, to be a Knight Grand Cross of the Order of St Michael and St George in recognition of his eminent services in connection with the investigation of the cause and cure of tropical disease.

OFFICERS ELIGIBLE FOR EXTRA PENSIONS

The note at the end of Para 734, A.R.I., Vol 1, defining the officers who are ineligible for the extra £100 pensions is obscurely worded. The Secretary of State has decided that officers whose commissions are dated 30th September 1889 are eligible for these pensions. With effect from the batch dated 31st March 1890, the grant of extra pensions ceases.

The regulations will be amended accordingly.

GALLANT BEHAVIOUR OF AN I.M.S. OFFICER

"The most Hon. The Secretary of State has requested that the thanks of His Majesty's Govt be conveyed to Capt McCowen, I.M.S., for the services he rendered on the occasion of the attack upon Acting Consul Smart near Kazeiun in December 1911."

1ST INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY TO BE HELD AT THE FACULTY OF MEDICINE OF PARIS FROM 17TH TO 23RD OCTOBER 1912

At this Congress, not only will the diseases, common to men and animals be the object of the many communications and reports that have already been received, but also the relations that may exist between the diseases of the different species of animals.

Vegetable pathology and the relations that may exist between some diseases of plants and those of animals will also occupy the attention of the Congress.

Among the principal subjects, which will fill the orders of business of the sittings, the following have already their reporters

Tuberculosis—Prof Calmette, Prof Vallee, M Chaussee

Human and aviary diphtheria—Prof Ailong, Prof Rappin

Cancer—Prof Menetrier and Dr Clunet, Prof Boirel

Small pox and vaccination—Director Chaumier, MM Caniere and Tomarkin (of Geneva)

Parasites peculiar both to men and animals—M Weinburg, Prof Deve, Prof Bodin, M Ch Moiot, Prof Perroncito

Nervous affections—Dr Maichand and Prof Petit

Hydrophobia—Dr Delannay, Dr Remlinger, Prof Babes

Comparative study of cinchoses—Dr M Garnier, Dr Ravenra

Pathology of inferior animals—Prof Perroncito

Milk—Prof Porcher, Dr Henri de Rothschild

International organisation of the struggle against foot and mouth disease—Prof Moussu

International organisation of the struggle against melitococcy—M Ch Dubois

Vegetable pathology—M Louis Blaringhem, Dr O Lacher, M Louis Dop (of Roma)

Various communications—

The most eminent scientific personalities belong to the Committee of organisation and selected Dr Roger, Professor of Experimental and Comparative Pathology at the Faculty of Medicine of Paris, as President with M Grollet, 42 rue de Villejust, as General Secretary

All the correspondence must be addressed to General Secretary, 42 rue de Villejust, Paris

THE ST JOHN AMBULANCE ASSOCIATION IN INDIA AND BURMA

It is notified for information that the annual report of Centres of the Indian Branch of the St John Ambulance Association, for the year ending 30th September 1912, should reach the Honorary General Secretary by the end of October 1912. Honorary Secretaries of Centres who have not received the necessary forms for rendering their report, can obtain the same on application to the Honorary General Secretary, Indian Branch, St John Ambulance Association, Chelva

The Annual Meeting of the Indian Branch Committee of the St John Ambulance Association was held at Viceregal Lodge, on the 16th September at 6 P M. His Excellency the Viceroy presided

It is notified for information that the Royal Institute of Public Health, Russell Square,

London, has offered to admit gratuitously two Indian Medical Service Officers yearly to work in their Laboratories for six months. Practical instruction is given to medical men desirous of qualifying as Medical Officers of Health, and a special Laboratory has been provided for serological work and such methods of examination as Wasserman's reaction

Officers wishing to avail themselves of the offer of the Institute during their study leave, should apply officially when submitting their leave applications

MEMORANDUM

IN connection with the foregoing offer, it is notified, for information, that the Royal Institute of Public Health, London, will be glad to arrange for the admission of two Indian Medical Service Officers, at any time that may be convenient to them to commence six months training at the laboratories of the Institute

The Institute will also be pleased to forward particulars of the course of instruction, on receipt of an application for admission

Reviews

Traite Pratique de Pathologie Exotique III Dengue, Fievre Jaune, Cholera, Maladie du Sommeil—By R FBOUL, CLARAC, SIMOND, MARTIN, Martin et Leboeuf Pares J B Bailliere et Fils, 1912 Price 12 fr.

THIS new volume is of less interest in India than previous ones, as much of it deals with diseases which do not as yet occur in this country. The article on dengue is of special interest at the present time, when an epidemic of the disease has once more visited Calcutta after an interval of forty years. The description follows classical lines, while we have found no reference in it to the existence of such a thing as sporadic dengue

The account of yellow fever is a full one. The carrier, the *Stegomyia fasciata*, is figured, and in the map showing its world-wide distribution the whole coast of India is included, so that the prospects of rendering India immune to the disease by the extermination of this common insect do not appear hopeful. On the other hand, the great progress made during recent years in stamping out the disease from its old haunts in Central and South America are steadily lessening the danger to India from the approaching opening of the Panama Canal

The article on cholera covers 125 pages and is a good one, the bacteriological section being especially full. In dealing with the treatment opium is recommended in the early stage, which is contrary to recent Indian experience, and several elaborate prescriptions containing it are given. Cantani's rectal injections of tannic

acid, so much used in Italy, are approved of. Intestinal antiseptics are not advocated, with the exception of permanganate of potash to destroy the toxins as advised by Rogers, whose hypertonic saline treatment is also recommended, although details of their administration are not given.

The last section is a full and well illustrated account of sleeping sickness in which the vast amount of recent work is excellently summarised. This volume will fully maintain the high reputation of the series.

A Manual of Post Operative Treatment—By HASSAN SUHRAWARDY 2nd Edition Messrs Thacker, Spink & Co, Calcutta, 1912

WE have already spoken in praise of the first edition of this little work, and the fact that a second edition has become necessary in a few months shows that the author has been successful in supplying a long-felt want. The great point about this little volume is that it is thoroughly practical, and that it gives a lot of information on the care and treatment of patients after they have left the surgeon's hands. Students beginning to attend the wards will find much of great service to them laid down in a clear and lucid manner, much that they will find invaluable in after-life in the care of their patients. Some new matter has been introduced, there is a chapter on anaesthesia, one on the preparation of the patient for operation, and the arrangements of the operation theatre is discussed. We congratulate the author on the success that has attended his efforts so far and wish him further success in the future.

Pellagra History, Distribution, Diagnosis, Prognosis, Treatment, Etiology—By STEWART R. ROBERTS Published by C V Mosby Co, St Louis

THIS is a monograph of 260 pages with numerous excellent illustrations of both the naked eye changes and the microscopical anatomy of the disease. It is written by an American physician, who has closely studied the disease on the continent of Europe as well as in the West and with a close acquaintance with the scattered literature of the subject. He describes the history and prevalence of the disease in Spain, Italy, Egypt and America, and points out that it is at present a much more acute disease in the last mentioned country. A full clinical description of the various symptoms and stages is given, the pictures of the skin lesions being especially good. The prognosis and diagnosis are next dealt with, and lastly, the etiology is discussed, the rival corn and parasitic theories being impartially dealt with, and the conclusion arrived at that there is no really definite evidence in favour of either, although most Italian authorities lean to the former and American to the latter. This interesting disease has not yet been described in India, but it is quite

possible that it has been overlooked here as it was for some time even in America. This book should enable any one to detect it if he came across the affection. There is a fairly full index, but it is to be regretted that the author does not give references to the more important papers on the subject, which would be of great use to other workers.

The Surgical Clinics of Dr John B. Murphy, Vol I, Part I, February 1912—Price per year of six numbers (one every other month) 35s, bound in cloth 50s. Each number about 130 octavo pages. W B Saunders Co, Philadelphia and London.

THIS book consists of verbatim reports of Dr Murphy's clinics which are held twice a week and are only attended by graduates, in other words, they are his clinical teaching. The method which is followed is that the history of the case is read out, any points in which it is deficient are elucidated by Dr Murphy himself, he then comments on the case and as he operates describes his procedure.

This volume covers a wide field of surgery, the cases including carcinoma of the breast, varicocele, nerve anastomosis, Charcot's disease of the hip-joint, duodenal ulcer and others. In the comments not alone are the actual points of the particular case dealt with, but one of them may suggest comparison with other cases in the author's practice so that the audience gets the benefit of his large experience.

The book is most readable and one learns many practical points in diagnosis and treatment. There are illustrations either of the case before operation, conditions found at operation, and also skiagrams.

Public Health Law—By ROBERTSON & McKENDRICK Published by E & S Livingstone, Edinburgh Price 5/-

AN epitome of the laws relating to public health conveniently divided into sections showing acts applicable to (1) Scotland, (2) England and Wales, and (3) the United Kingdom. We do not find a section devoted to the London Acts. This handy little book is a most useful vade mecum for the M O H and a cram-book for the candidate for a D P H. It is excellently arranged, well-indexed and clearly printed. It is not much use to workers in India as most examining bodies for the D P H will accept Indian Law from candidates intending to practice in this country.

Military Hygiene and Sanitation—By COL C H MELVILLE Published by Edward Arnold, Maddox St, London Price 12/6

THERE is no body of sanitary officers in the world that have produced such excellent results as the R A M C in the last decade, and we welcome this book from Colonel C H. Melville, the Professor of Hygiene at the R A M

College, which gives us the fruits of his long experience and knowledge

In the introductory chapter Col Melville emphasises the necessity of subordination to the exigencies of the commander. He most ably points out how the responsibility rests with the commander, and if that officer decides that he can best defeat the enemy by losing men by overmarching, it is not the place of the principal medical officer to harass him with protests. This chapter contains most sound advice which must be carefully studied by all medical officers who desire absence of friction with the executive.

Most excellent detailed treatment of the question of recruiting, physical training, and marching are next dealt with. The amount of water needed on the march is very definitely laid down. In the chapter on Diet the author disagrees, as most practical men do, with Christenden's conclusion and also protests against monotony in diet. In the chapter on Waste destruction, Col Melville is half-hearted in recommending incinerators. In our experience the objections which he enumerates are generally the result of faulty construction chiefly insufficient chimney height and consequent failure of draught. In the chapter on Malaria Prophylaxis the importance of removal to a distance of native bazars is omitted. The numerous children in these bazars are generally the source of infection.

The book is one of the most important that has ever been written on the subject, and no medical officer with troops can afford to be without it. We hope to see many editions keeping pace with the progress of the science.

The Bacteriology of Surface Waters in the Tropics—By MAJOR W. W. CLEMESHA, M.D., D.P.H., Sanitary Commissioner, Bengal. Thacker, Spink & Co, Calcutta. Rs 7 8.

THIS is a scientific monograph giving the results obtained by the author and his assistants in a very large series of experiments carried out in Madras and Bengal. It deals with a highly technical and difficult subject on which the author is a past master and the book will become a standard work of reference.

The main conclusion arrived at is that in the tropics we cannot rest content with demonstrating the "true coli group" of Houston and Savage nor condemn waters containing them. The author shows that further analysis of the species included in this group is of the greatest importance, each member of the group having a special significance. Moreover some bacilli not included in Houston's true coli, such as *Oxytoccus pernicius*, are in the tropics a certain indicator of objectionable contamination.

There is a certain amount of controversial matter which the English experts may attack. Every worker in the tropics must make an intimate study of Major Clemesha's findings.

A Practical Text-book of the Diseases of Women—By ARTHUR H. N. LEWERS, M.D., F.R.C.P. Seventh Edition. Illustrated. H. K. Lewis, London, 1912. Price 12s 6d.

THIS well-known and highly-appreciated text-book has been a favourite with students and qualified medical men for a large number of years. The present edition has been considerably enlarged and much new matter added in various parts of the book, and the whole has been thoroughly revised. The section on cancer of the uterus and that on fibroid tumours have been amplified. A large number of additional illustrations appear also several micro-photographs. We can only repeat our appreciation of former editions of this important work, an appreciation that has received ample endorsement from the profession as the necessity for seven editions would demonstrate. We would particularly bring it to the notice of senior students attending the gynaecological wards of hospital.

A Cyclopædia of American Medical Biography, comprising the lives of eminent deceased Physicians and Surgeons, from 1610 to 1910—By HOWARD A. KELLY, M.D. Illustrated with Portraits in two volumes of 969 pages. Messrs W. B. Saunders Co. Cloth 42/- net.

THESE two volumes have required five years of careful study and research for their compilation. In them the author's aim has been to give a brief outline of the life of every medical worthy who has lived in the United States and in Canada—men who were distinguished, either as original thinkers, teachers or as leaders in medicine in any part of the country. By the conjoint labours of a large number of able coadjutors, upwards of twelve hundred worthies have been gathered in to this Hall of Fame.

Those who have acquaintance with Professor Kelly's work on abdominal surgery will find the present volumes quite up to the high standard therein set up, and the very large number of medical officers in India, who have the cultivated man's desire for literature and a knowledge of the lives and writings of distinguished members of the profession, will be charmed with the material afforded for further study.

The work will be found of great advantage as a book of reference and its value is considerably enhanced by the beautiful illustrations and the splendid manner in which the publishers have done their share of the work. It is a cyclopædia that should be in every library and on the bookshelf of all those who are interested in the lives of the founders of medical knowledge.

Preventable Cancer a Statistical Research—By ROLLO RUSSELL. Messrs Longmans, Green & Co, London, 1912. Price 4/6.

THE author has collected a very great deal of information bearing on the conditions that

accompany cancer. Whether any of these is the real exciting cause of tumour formation is quite another question. The plan of the book is on much the same lines as "Strength and Diet." Every thing toxic, beer, alcohol, tea, coffee, etc., every thing irritating hot tea, hot foods, hot pipe, cigarette, etc., uric-acid producing food, meat or fleshy foods—every thing except cold water and simple vegetable foods would appear to be under suspicion. The question arises. Is life so well worth living that every thing worth having or doing should be given up in order to preserve it? We doubt it, even these things were proved to be the cause of cancer, as they have not been proved, people, no doubt, will go on drinking beer and eating meat despite the horrors said to be liable to follow thereon.

The New Physiology in Surgical and General Practice—By A. RENDLE SHORT, M.D., F.R.C.S. (Eng.) Second Edition, Revised and Enlarged, 1912. Messrs John Wright & Son, Ltd., Bristol.

It seems a very short time since we gave a hearty welcome to the first edition of this work on the application of modern Physiology to surgical and general practice. Of course we may be biassed, but it has always appeared to us that there was too great a desire on the part of the practising physician, and particularly the surgeon, to belittle the advances that have been made in physiology and treat them as of little practical importance. That time is past that such is the case is all to the welfare of the profession at large. The speedy call for a second edition of this handy little book shows how ready the profession is to avail itself of knowledge that can be applied to the incidents of every-day life.

The author has taken advantage of the opportunity of adding some new chapters and enlarging on the old. Macewen's work on the growth of bone is carefully gone into—a subject of the highest importance to the surgeon. The uses and dangers of saline transfusions are discussed—a subject of very great interest in India where saline medication is largely resorted to. We can only repeat our high appreciation of the book and recommend every medical officer to possess a copy and read it.

Symptoms and their Interpretation—By JAMES MACKENZIE, M.D., LL.D. Second Edition. Messrs Shaw and Sons, London, 1912.

ANYTHING from the pen of Dr. Mackenzie requires little in the way of recommendation to induce the profession to read what he has written. This new edition of the above work is the endorsement of the world's opinion on the importance of his views on the valuable aid to diagnosis afforded by the careful study of pain, and the nervous phenomena which accompany it.

We have very great pleasure in bringing this new edition to the notice of the profession in India and in recommending its perusal. The

study of the many practical hints and deductions from reflex phenomena in diseased conditions cannot fail of being of great assistance to the practising physician.

Elements of Practical Medicine—By A. F. CARTER, M.D., M.Sc. Tenth Edition. H. K. Lewis, London, 1912. Price, 9/-net.

WE have already spoken very highly of former editions of this work and are pleased to see that it retains the popularity. As an introduction to the study of medicine, it has held its place for over thirty years, which fact in itself speaks volumes for its usefulness. The present edition has been thoroughly brought up to date, new facts have been noticed, traditional views have been modified in accordance with the most recent teaching, and old matter has been re-cast. Some new matter has been introduced and given fuller treatment on general principles, and the whole text has been thoroughly revised. We can sincerely congratulate both author and publishers on the production of the book. It is exactly what is wanted by students on entering the wards of the hospital and a thorough knowledge of the broad general principles to be found in this volume will be found a firm basis for the building up of the more detailed knowledge demanded in later years. We may be permitted to state that the subject-matter is treated in a most lucid manner that makes it a pleasure to read.

Sexual Impotence—By VICTOR G. VICKI, M.D. Fourth Edition, Enlarged. Messrs W. B. Saunders Co., 1912.

THIS is the fourth American edition of this standard work on sexual impotence. The volume was first published in German. That it meets a distinct want in the realm of medical knowledge no one who has had an opportunity of reading its interesting pages can deny.

The subject is discussed in a frank and open manner and in the present day no medical officer can afford to treat the functions of the sexual organs with the lofty scorn meted out to them as a rule in former days.

The present edition has been considerably enlarged and the many steps forward made in urology have been extensively referred to. A good deal of new matter has been introduced in the chapters dealing with the anatomy and physiology of the generative organs, and many modifications and additions have been made in the chapters on the treatment of sexual impotence.

This book is one of great interest to the profession and the subject treated of is not one concerning which the average practitioner knows much about. A careful perusal of this volume will repay all whose business is to advise and treat the sick, whatever may be the cause of ill-health.

SPECIAL ARTICLE

THE PROTEIN ELEMENT IN NUTRITION

By COLONEL R. H. FIRTH,

Royal Army Medical Corps

WHILE agreeing with much that was stated in the leading article on this subject in your issue for July 1912, it appears to me that many of the difficulties and fallacies which underlie this complex question of protein metabolism are due to the fact that we are, and have been for some time, arguing from wrong premises. For this, we must blame our imperfect knowledge based mainly on the classical teaching of men whom we rightly hold in respect. To name a few of these men, one can mention such teachers as E. A. Parkes, Voit, Playfair, Rubner, Moleschott and Atwater. Their teaching as to the nutritive value of the food-stuffs was based upon the conception that all our foods resolved themselves into the primary divisions of proteins, hydrocarbons, carbohydrates and the mineral salts. Their teaching dominates our outlook on the whole question of dietetics. That it has thus dominated our outlook is quite intelligible, in that these men were the only ones who had studied the question as physiologists, and their *dicta* on the subject were, up to quite recent times, the only authoritative statements on which the ordinary man could base his own views and practice.

My point is this. The concept of the physiologists as to nutrition and the metabolism of the food-stuffs, which has been followed and accepted so slavishly, is certainly crude and probably wrong. In the light of more recent work it needs revision. In place of valuing the food-stuffs only by their content in terms of protein hydrocarbon, carbohydrate and calorie, we shall need and must need to look deeper, that is, look to the composing molecules which represent and go to constitute what we call proteins, hydrocarbons and carbohydrates. I have no intention to discuss the whole series, as it would take too long and too much space, but confine my remarks to the proteins only.

Most men are familiar with the work of Emil Fischer and the results he obtained by hydrolysing the proteins and determining their content in terms of the amino acids. That work shows that the proteins differ enormously in the quantity and nature of both their constituent molecules and cleavage products. For instance, the vegetable proteins are found to have a large content of glutamic acid, or something like 40 per cent of glutamic acid. Some proteins, such as gliadin, zein and gelatin are strikingly deficient in some of the amino acids. The relative quantities of amino acids in a protein is probably a very important factor in its nutritive value. Experiments show that the proteins

which are deficient in tryptophane, tyrosine, and phenylalanine are quite unable to keep the body in nitrogen equilibrium. Some experiments by Michaud* show that if dogs are fed with their own proteins, a relatively small amount of nitrogen input suffices to keep them in nitrogen equilibrium. From this, we can infer that an animal fed on proteins which differ, as to their amino acid content, from the proteins of its own body is compelled to use more proteins and unable to turn to good account the amino acids of these extraneous proteins which exist in the food in a proportion greater than in its own body. Analogous experiments by Mandel and Osborne,† in which rats were fed on different proteins, show that even proteins which are complete in their amino acid content are insufficient to secure normal growth in young animals, though capable of maintaining nitrogen equilibrium in adult animals. Other experiments by Abderhalden‡ have shown that the proteins of the blood serum remain constant in animals fed only on gliadin which has 43 per cent or a high content of glutamic acid.

In the light of modern research, it is permissible to infer, that to say that a given diet contains so much protein is not enough, we need to be more precise as to the nature of the protein input and to know how much of that protein is assimilable and how much is wasted. From this point of view, we can understand how and why many people take in their food more nitrogen than is really necessary. In the same sense, we obtain the clue as to some of Chittenden's results and, indirectly, find reason to think that the criticism levelled at his teaching is not only unwarranted, but also based upon orthodox teaching which, in the light of recent work, calls for revision. Were our knowledge more complete than it is now, it would be possible to choose a diet and detail precisely all and only those substances which are necessary for life. Were we able to do this, it is extremely probable that the protein input would be much below the figure which orthodox present day teaching lays down as needful, and possibly also the figures for fats and carbohydrates would be materially modified. The truth is we are very ignorant still, and when we talk of protein we speak of something of which we are only now beginning to know the real facts. The same can be said of the fats and carbohydrates. Therefore, in this matter of nitrogen or any other metabolism, it seems to be desirable that we should not be hasty in our criticisms of results which do not quite square with all the facts as we happen to think we know them. What the future has in store for us in the way of knowledge, no one can say, but, it is not beyond the bounds of possibility that, so far as

* Michaud *Zeitsch f. Physiol.* LIX, p. 405, 1909.† Mandel and Osborne. See article in *Science*, 1911, Vol. XXXIV, p. 722.‡ Abderhalden *Zeitsch f. Physiol.* XLVI, p. 193, 1906.

concerns the protein input, the routine procedure will be to estimate the value of a diet in terms of amino acids and that the correct protein input or content of a given dietary will be synonymous with a mixture of the amino acids in right proportion. Other possible developments suggest themselves. It is obvious that the definite amount of protein or amino acid, or fat, or of carbohydrate necessary, cannot be considered only from the point of view of food. We know that they are used as such, or more probably transformed within the body into substances which are able to act in very small quantities. Such substances in the body are familiar to us as ferments, hormones, and products of the special secretory glands, as to the nature and action of which we are only now beginning to know something. The vista which these considerations must raise in any thoughtful mind, may not warrant the conception of an artificial food, but it does justify the plea for a very guarded dogmatism as to what is and what is not a normal and perfect dietary, more especially as to the protein content.

Chittenden does not claim to have established definite numerical standards, at most he claims to have shown that athletes can maintain mental and physical vigour upon a daily output of 88 grammes of nitrogen representing the metabolism of 55 grammes of protein, as against the customary 110 to 120 grammes. For many weeks, the writer of this note checked his own nitrogen output and, synchronous with an active physical and far from torpid mental existence, found that physical and mental vigour was maintained upon a daily metabolism of from 58 to 60 grammes of protein. At this present time, one's protein metabolism does not depart materially from this low figure. To argue too freely from these facts would be fallacious, but still they have their meaning. The usual line taken by critics of the plea for a possible lowered nitrogen or protein input is that the habits of the great mass of a people must be regarded as equivalent to their physiological needs, and that as all the energetic and dominant races of mankind eat largely, their activity and success should be attributed to their liberal diet. This is the same argument that is used by the advocates of alcohol, and suggests some confusion between the ability to obtain means for satisfying natural appetite and the unrestrained use of these means. Experience, especially history, shows unfortunately that the second follows too often the first, but it has not been for the advantage of the races concerned, who have generally fallen into decadence in consequence.

A survey of the dietaries of the different races of mankind shows such wide divergences that it is impossible to state dogmatically that any one diet is the best. We cannot eliminate questions of race, climate and custom from the

results as we see them, but to us as members of a scientific profession, having the care of the public health as its chief concern, the examination of this question in all its aspects should be of the utmost interest, even though the conclusions to be drawn may not seem so clear and conclusive as some enthusiasts suppose. As suggestive of an alternate view to that taken in the editorial article in the July issue of the *Indian Medical Gazette*, this note is written. It may not be convincing, but it is a plea for a wider outlook, above all, it asks for attention to the marked differences in the decomposition products of various kinds of protein, any of which may be and probably are needed for the corner stones in the building up of tissues in a particular kind of animal, or for the performance of special functions. In a few words, the protein elements in nutrition is still a problem to be solved, and its solution involves not merely a conception of how much but of what kind.

Correspondence

'HYPODERMIC SYRINGE'

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—In reading the letter of "G R" in the *I M G* for August 1912 re the 'Hypodermic Syringe,' it occurred to me that it might be helpful to mention a far more simple and in my hands, efficient and safe means for sterilizing a hypodermic syringe and needle. I use an all glass syringe of the Luer type (out here, the "glaseptic" of Messrs. Pike, Davis & Co., and fill and empty it three or four times with chloroform, then dry it by drawing into and expelling air from it before administering the hypodermic dose. I follow this by cleaning and drying the syringe and needle with more chloroform. By this method I have never had an abscess develop in hundreds of hypodermic administrations of drugs.

Yours, etc.,

J. E. R.

NAINI TAL,
12th August 1912

HONOURS AND REWARDS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR,—I am directed to bring to your notice—

1 That any member of the Medical Staff of your Centre who has given gratuitously four courses of lectures is entitled to have his name submitted for Honorary Life Membership of the St. John Ambulance Association. Honorary Secretaries of Centres in India, should forward, on forms supplied for that purpose and which can be obtained from the Honorary General Secretary, Indian Branch the names of such lecturers to the Honorary General Secretary of the Indian Branch, who will submit them to the Central Executive Committee, St. John's Gate, for consideration.

2 That the issue of handsome certificates in recognition of work in India has been approved. These certificates will be signed by His Excellency the President and awarded by the Indian Executive Committee half yearly.

3 That gold silver and bronze medals are awarded by the Order of St. John of Jerusalem for life saving or special service in the cause of humanity.

These medals are authorised to be worn with military or civil uniform.

4 That His Majesty the King Emperor on the recommendation of His Royal Highness the Grand Prior and Chapter of St. John grants a Silver Service Medal after a number of years' service in the St. John Ambulance Brigade which may be worn in all orders of military and diplomatic dress and also on all occasions when decorations are worn in plain clothes. This medal can be awarded to Mussalmans, Hindus and persons of all creeds. It is worn suspended from a black and white ribbon on the left breast immediately after badges of Orders and before war medals. (King's Regulations and Dress Regulations for the Army.)

All recommendations for services in India deemed by Centies to be worthy of the life saving medals or of the Indian Branch awards should be submitted through the Centies' Committee so as to reach the Honorary General Secretary of the Indian Branch, not later than the 1st January and 1st July of each year.

All such recommendations must be accompanied by a detailed statement of the special services of the individual recommended.

The Service Medal is applied for on a special form

Yours faithfully,

THE HONORARY GENERAL SECRETARY,

Indian Branch, St John Ambulance Association

BUGS AND THEIR REMEDY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Major Cornwall's letter under head "Bugs in Rail way Carriages" appeared in your esteemed journal for February 1911, and solicited information on 4 points remedied Captain Stevenson I M S, in June 1911, took up the matter in earnestness and advocated Cyanide Potassium and referred to the Hydrocyanic gas treatment used on the Cape Government Railways.

In August 1911, another correspondent suggested "Kerosene Oil" and he was latterly followed by another correspondent who questioned the value of "Kerosene Oil" theory, and put forward the advantage he had obtained from the application of an emulsion consisted of "Sorp Suds" and "Turpentine." I have had no opportunity to try the first remedy suggested by Captain Stevenson, I M S, and therefore I can not pass any opinion, but Kerosene Oil has been tried with out any appreciable relief.

I am, however, at one with Major Cornwall, I M S, when he says that disinfection of bug infested carriages on an expensive, and I may add, even on an extensive scale is probably beyond the resources of Indian Railways, and therefore for the interest of the "unlucky" travellers something on a smaller scale should be done that might be practicable and effective.

I have tried 'Turpentine' on several occasions and can at once without any fear of contradiction say that the results is simply charming. Its emicidal effect on bugs is direct and complete. Moreover the action is immediate. My humble experience is that scarcely a minute is required to kill hundreds with a few drops of turpentine. It can reach the bugs in the crevices, it is innocuous to human beings, it does not injure the woodwork, varnish, etc., it is inexpensive, and a very small quantity can serve the purpose. It does not require an intelligent or a trained hand for the operation.

My conclusion is that those who are eager to protect themselves from the attack of the bugs and when it is practically admitted that these are not only 'troublesome disturbing agents' to human beings, but several bacterial and parasitic diseases can also be conveyed by them, a regular crusade should be formulated for the prevention and destruction of the bugs which like mosquito, if no early measures be adopted, will make human life impossible in course of time.

I remain,

Sir,

E B S RAILWAY }
BARRACKPORE }
19th August 1912 }

Your most obedient servant,
SATKARI GANGULI,
Relieving Sub Asst Surgeon

THERAPEUTIC NOTES

'WELLCOME' BRAND STREPTOCOCCUS VACCINE, DENTAL

THE treatment of pyorrhea alveolaris by means of bacterial vaccines is a measure which has been employed somewhat extensively, and has met with a considerable degree of success. In the majority of cases of pyorrhea it is found that the predominant organisms are streptococci. Messrs Burroughs Wellcome & Co have, therefore, issued, for use in this condition, the 'Wellcome' Brand Streptococcus Vaccine, Dental, which contains several strains of streptococci obtained from cases of pyorrhea alveolaris and septic conditions of the teeth and gums. It is a carefully prepared vaccine produced under expert bacteriological control, and is issued, in hermetically sealed 1 c.c. phials, in two dilutions containing respectively 10 million and 50 million organisms. The dose of this vaccine is 5 million organisms, gradually increased to 50 million, and may be given at intervals of seven to ten days.

'VAPOROL' PITUITARY EXTRACT 0.5 c.c.

FROM the clinical point of view one of the most notable results of investigations on the internal secretions of the ductless glands has been the preparation and introduction into therapeutics of an extract of the infundibular portion of the pituitary body. Such an extract, when injected intravenously or intramuscularly, raises the blood pressure and keeps it raised, acts as a stimulant of plain muscle, particularly of the uterus, slews and strengthens the heart beat and causes profuse diuresis. All these actions have been taken advantage of clinically, and the extract has been successfully used in shock, in post partum haemorrhage and after labour generally, in cases of intestinal cramps and atony following operations, in typhoid and other fevers, and as a diuretic. In a large number of the successful cases recorded in the literature, the preparation used has been 'Vaporole' Pituitary (Infundibular) extract, a sterilised preparation issued by Messrs Burroughs Wellcome & Co. This has hitherto been available only in quantities of 1 c.c. but as a result of its more extended use, and to provide further convenience in dosage, it has now been issued also in containers of 0.5 c.c.

'Vaporole' Pituitary (Infundibular) Extract, 0.5 c.c., packed in boxes of six hermetically sealed containers, and being sterile, is ready for immediate injection.

Service Notes

LIEUTENANT COLONEL WILLIAM AINLEY SYKES of the Bengal Medical Service, retired on completion of thirty years' service, receiving one of the extra pensions for the current year, from 16th July 1912. He was born on 22nd July 1857 educated at Bails, took the M R C S and the L R C P London in 1879 and the M B London in 1881, and entered the I M S as Surgeon on 1st April 1882. He became Surgeon Major on 1st April 1891, Lieutenant Colonel on 1st April 1902, and was placed on the selected list from 2nd April 1909. Lieutenant Colonel Sykes has a long record of war services beginning with the Sudan in 1885 when he served at Suddin, receiving the medal with two clasps, and the Khedive's bronze star. In Burma he served for four years 1885 to 1889, taking part in the expeditions to the Ruby Mines, when he was mentioned in despatches, G. G. O. No. 434 of 1887, received the medal with two clasps and was decorated with the D S O from 1st July 1887. On the North West Frontier he saw service in the Zhob Valley in 1890, in Waziristan in 1891-95, receiving a clasp, and in the campaigns of 1897-98 on the Malakand, in the operations in Bajaur and in the Mamud country, in Buner and in the action in the Tonga Pass, was mentioned in despatches, G. G. O. No. 217 of 1898, and received the medal and clasp. His last war service was in China in 1900, gaining the medal for that campaign. The first twenty years of his service he remained in military employment and for the last ten years under the Foreign Office, at the time of his retirement he was a first class Agency Surgeon. His last appointment in India being that of administrative Medical Officer in Baluchistan.

LIEUTENANT COLONEL JAMES JOHN PRATT, of the Bengal Medical Service, retires from 27th December 1912 receiving one of the two extra compensation pensions allotted to the Bengal service for the current year. He was born on 12th June 1860, educated at Westminster Hospital, took the L R C P, Edinburgh in 1881, and the M R C S in the same year and entered the I M S as Surgeon on 29th September 1883. He became Surgeon Major on 29th September 1895, Lieutenant Colonel on 29th September 1903 and was placed on the selected list on 22nd June 1909. He served in the North-West Frontier, in the Zhob Valley campaign of 1884, but most of his service had been spent in civil employ in the N W P, now the United Provinces where he was for long Civil Surgeon of Fazaabad, and lastly of Lucknow. Since November 1910 he had been on furlough. His name will long remain associated with his work in India, through the name "Pratt's Operation" for hydrocele. In 1912 the Royal College of Surgeons, England, conferred upon him the honorary diploma of F R C S.

MAJOR HUBERT MALINS EARLE of the Bengal Medical Service, retired on 27th July 1912. He was born on 4th November 1865 entered the I M S as Surgeon Lieutenant on 27th July 1892, became Surgeon Captain on 27th July 1895 and Major on 27th July 1904. He served in the North West Frontier campaign of 1908, in the operations in the

Nomund country. Except for a short spell of civil employment in Bengal, his whole service had been spent on military duty, and he had been on furlough since 24th June 1911. He was educated at Middlesex Hospital, and took the M R C S and L R C P, London, in 1893.

A ONCE famous Bengal Civilian passed away, at the age of 83, on 31st July 1912, at his house in Upper Norwood. Mr. Allan Octavian Hume. Entering the Bengal Civil Service in 1849, he was Magistrate of Etawah when the mutiny broke out, and distinguished himself as a strong and energetic District Officer both during and after the mutiny. During the campaign he served as a volunteer gunner at Nurch, and saw much irregular service in the field in the N W P. He received the C B in 1860 after the suppression of the mutiny. In 1879 he became a member of the Board of Revenue, and in 1882 he retired. He was well known throughout his service as a great authority on ornithology, perhaps the chief authority on that subject in India after Dr. Jerdon. He was the author of *Stray Feathers* and with Major Marshall, R.E., of the great work, now almost unobtainable, *The Game Birds of India*. After his retirement he became known to fame in another direction as the most important European supporter of the Indian National Congress. Mr. Hume's special interest to the I M S lies in the fact that he was the son of an even more famous father, Assistant Surgeon Joseph Hume, who entered the Bengal Army on 27th August 1799, retired with a fortune of £40,000 in February 1808, and sat in the House of Commons where he was one of the leaders of the most advanced radical party, from 1818 till his death on 20th February 1855.

LIEUTENANT COLONEL DOUGLAS RICHARD GREEN of the Bengal Medical Service retired on 1st August 1912. He was born on 20th June 1863, educated at University College, London, took the M B, B S, London in 1891, and the M D, in 1892, and entered the I M S as Surgeon Lieutenant on 27th July 1892, becoming Surgeon Captain on 27th July 1895. Major on 27th July 1901, and Lieutenant Colonel on 27th July 1912. He served on the North West Frontier of India in 1897-98, in the Tirah campaign when he was present at the actions of Ohagru Kotai, Dargu, and of the Sampagha and Ashangr Passes, the operations at and around Dwarot and the action of 21st November 1897, and the operations in the Bara Valley from 7th to 14th December 1897, receiving the medal and two clasps. For some years past he had been in civil employment in Eastern Bengal and Assam.

Two veterans of the A M D, both of whom had served in the Crimea, have recently died. Dr. Thomas Lewis Rogers died at Eltham, Kent, on 7th August 1912 aged 83. He was educated at Barts, took the M R C S in 1853, and served throughout the Crimean campaign with the Coldstream Guards. He left the Army in 1858, and served for thirty years in the Asylum Service. Colonel Samuel Bradley Roe C B died at Ballynall House, Cavan, on 22nd July 1912 aged 82. He took the M B at Trinity College, Dublin, in 1855, and joined the A M D the same year serving with the 92nd Gordon Highlanders in the Crimea, the Mutiny, and the Afghan War. He also served in South Africa in 1881, and received the C B.

No 3930 I (C G S), dated the 23rd March 1912

WITH a view to assimilating the peace and war designations of officers of the Medical Branch of the Army Head Quarters, India, the Government of India have decided that the present designations of the officers of that Branch should be altered as follows—

- (1) "Principal Medical Officer, His Majesty's Forces in India" to become "Director, Medical Services, Army Head Quarters, India."
- (2) "Deputy Principal Medical Officer, His Majesty's Forces in India," to become "Deputy Director, Medical Services Army Head Quarters, India."
- (3) "Secretary, Indian Medical Service" to become "Assistant Director, Medical Services (Indian Service)."
- (4) "Secretary, Royal Army Medical Corps," to become "Assistant Director, Medical Services (British Service)."
- (5) "Sanitary Officer," to become "Assistant Director, Medical Services (Sanitary)."

No 2181 I (D M S), dated the 27th June 1912

IN continuation of Army Department letter No 3930 I (C G S) dated the 23rd March 1912, I am directed to state that with a view to assimilating peace and war designations the Government of India have decided that the present

designations of the officers of the medical services enumerated below should be altered as follows—

Present designation	Altered designation
Principal Medical Officers of Divisions, when the appointments are held by Surgeons General	Deputy Director of Medical Service
Other Principal Medical Officers Divisions and Brigades	Assistant Director of Medical Services
Sanitary Officers of Divisions	Deputy Assistant Director of Medical Services (Sanitary)
Staff Officer for Medical Mobilisation Stores	Deputy Assistant* Director of Medical Services (Mobilisation)

* Sanctioned in Army Department letter No 10117 (P M O 1) dated the 27th September 1911

THE Government of India consider it desirable to call attention to the orders of the Secretary of State for India requiring officers on leave out of India to obtain his sanction before taking up private employment. They have further decided to extend the authority granted to Local Governments in the Resolution above cited to permit officers on leave to accept employment outside Government service. The Governor General in Council is accordingly pleased to revise, as follows, the orders contained in that Resolution.

2 The Government of India desire to repeat that any such as leave is intended as a period of recreation and rest, and is granted to an officer for the purpose of recruiting his health, it follows that taking up employment during leave is not permissible save in exceptional circumstances and with special sanction.

3 A gazetted officer, who is in receipt of furlough or leave allowances must obtain if he is resident out of India, the previous sanction of the Secretary of State, or, if resident in India, that of the Local Government, or (if he is serving under the Government of India) of the Government of India, before taking service under an employer other than Government, or accepting any employment not being under Government, which involves the receipt of a fee or honorarium. In the case, however, of a non gazetted officer resident in India the special permission of the officer empowered to appoint him may be accepted as sufficient authority.

4 The orders contained in the preceding paragraphs refer to the acceptance of the employment of any description whatever, not being employment of the kind for which the Foreign Service Rules in Part VII of the Civil Service Regulations provide. An officer in receipt of leave allowances cannot take up an appointment which is such as should, for public reasons and not merely in his own interests, be filled by a servant of Government unless he has been transferred there to in the regular way by the authority empowered to authorise his transfer under the rules regulating transfers to Foreign Service. An officer who has been so transferred ceases from the date on which he takes up the appointment, to be on leave, and is no longer entitled to draw leave allowances from Government. He becomes an officer in active service drawing from his employer pay fixed in accordance with rule.

THE Chief Secretary to the Government of the United Provinces on enquiring whether the above orders prohibiting the receipt of fees by Government Officers while on leave, apply to Medical Officers received the following reply—The orders in question, while they apply to Medical Officers refer only to employment and that as the relations of patient to doctor are not those of employer there is nothing to prevent a Medical Officer on leave from engaging in private practice though the rules would forbid him from entering the employment of any institution.

LONDON SCHOOL OF TROPICAL MEDICINE EXAMINATION
RESULT 39TH SESSION MAY—JULY, 1912

Chambellan, Major W P (U S Army), M D (U S A)
Lapsley, Capt W (I M S), M B, R U I
McCombie F O, M D (Lond)
Smith, Capt H Bmslie (I M S), M B, Ch B (Aber)
Price, Major H R (I M S), M P, F P C S
Allen W (Colonial Service), M B Ch B D P H
Brother, S L (Colonial Service), M R C S, L R C P, D P H
Geale W J L F C P & C E
Johnston J E L (Colonial Service), M B, B S (Lond), M P C S, L R C P
Owen A H (Colonial Service) M R C S, L R C P
Spearman, B (Colonial Service), M B, B C (Camb)

With Dis
tinction

THERE were 64 students in attendance. Among this number are included the following officers of the Indian Medical Service —

Major F Browne
" H R Brown
" R H Price
Captain A A C McNeill
" C A Goullay
" H Emslie Smith
" W Lapsley
" G I Davys

LIEUTENANT COLONEL T E DYSON, M.B., C.M. (Edin), D.P.H. (Bul), I.M.S., has been allowed by His Majesty's Secretary of State for India an extension of furlough for eleven days.

HIS EXCELLENCY the Governor in Council is pleased to make the following appointments during the absence on leave of Lieutenant Colonel W E Jennings M.D., C.M. (Edin), D.P.H., I.M.S., or pending further orders —

Lieutenant Colonel J Crimmin, V.C., C.I.E., D.P.H., I.M.S., to act as Health Officer of the Port of Bombay.

Major E F Gordon Tucker, M.B., B.S., M.R.C.P. (Lond), I.M.S., to act as Presidency Surgeon, Third District and in medical charge of His Majesty's Common Prison, House of Correction and Byculla Schools.

CAPTAIN H B STEPHEN, I.M.S., 1st Resident Surgeon, Presidency General Hospital, Calcutta is allowed privilege leave combined with study leave and furlough for one year and seven months, viz privilege leave for three months under article 260 of the Civil Service Regulations, study leave for seven months under rules 2 and 6 of the Study Leave Rules, and furlough for the remaining period under article 308 (b) of the Civil Service Regulations with effect from the 22nd August 1912, or any subsequent date on which he may be relieved of his duties.

MAJOR R SEFFEN, I.M.S., Civil Surgeon of Bulandshahr, was on furlough on medical certificate from the 13th May to the 20th July 1912, inclusive.

LIEUTENANT COLONEL JOHN CRIMMIN, I.M.S., and Major E F Gordon Tucker, I.M.S., respectively relieved over and received medical charge of H.M.'s Common Prison and H.M.'s House of Correction, Bombay, on the 10th August 1912, after office hours.

MAJOR W LAPSLEY, I.M.S., Civil Surgeon, has been granted by His Majesty's Secretary of State for India permission to return to duty.

MAJOR H J WALTON, I.M.S., Civil Surgeon, on completion of his training in clinical bacteriology and technique at Kasauli to Saharanpur.

INDIAN MEDICAL SERVICE

SUCCESSFUL CANDIDATES

THE result of the competition for commissions in the Indian Medical Service, which was held at the Royal Army Medical College and at the Examination Hall, Victoria Embankment recently is announced. The following are the names of the successful candidates, arranged in order of merit —

	Marks
J D Wilson, M.A., M.B., Ch.B., Edin	3,718
L A P Anderson, B.A., B.C., Camb Univ and St George's Hosp	3,519
W C Piton, M.A., M.B., Ch.B., Edin	3,481
J B Hance, B.A., M.B., B.C., M.R.C.S., L.R.C.P., Camb Univ and Guy's Hosp	3,389
S Gordon, B.A., B.C., M.R.C.S., L.R.C.P., Camb Univ and London Hosp	3,316
G Y Thompson, M.B., B.S., Lond., M.R.C.S., L.R.C.P., Guy's Hosp	3,374
H K Rowntree, M.B., B.S., Lond., L.M.S.S.A. Middlesex Hosp	3,268
B F Eminson, M.B., B.S., Lond., Charing Cross Hosp	3,216
A Kennedy, B.A., B.C., M.R.C.S., L.R.C.P., Camb Univ and Middlesex Hosp	3,186
J C John, B.A., M.B., B.C., M.R.C.S., L.R.C.P., Camb Univ and St Bart's Hosp	3,172
S D Ratnagar, B.A., L.M. & S., L.R.C.P. & S., Edin, L.F.P. & S., Glasg., London Hosp	3,157
C Moliver, M.R.C.S., L.R.C.P., Univ Coll Hosp	3,063

MAJOR G HUTCHESON, I.M.S., Civil Surgeon of Aligarh, held visiting medical charge of the Bulandshahr district,

from the 13th May to the 20th July 1912 inclusive, *vice* Major R Steen, I.M.S.

MAJOR G T BIRDWOOD, I.M.S., Civil Surgeon of Lucknow, to hold visiting medical charge of the Rae Bareilly district, *vice* Captain Cameron, I.M.S.

CAPTAIN A CAMERON, I.M.S., officiating Civil Surgeon of Rae Bareilly to officiate as Superintendent of Central Prison, Benares, *vice* Captain C E Palmer, I.M.S., granted leave.

CIVIL Assistant-Surgeon Khairag Bahadur Singh, Kirki, attached to the sadri dispensary at Rae Bareilly to hold civil medical charge of that district, in addition to his other duties, *vice* Captain Cameron, I.M.S.

ON return from the combined leave granted him by Orders No 2361 dated the 6th October 1910, No 1319 dated the 11th July 1912, and No 1454, dated the 3rd August 1912, Major J C S Oxley, F.R.C.S.E., M.R.C.S., L.R.C.P., I.M.S., Civil Surgeon, is posted to Chanda.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Major J C S Oxley, F.R.C.S.E., M.R.C.S., L.R.C.P., I.M.S., Civil Surgeon, Chanda to the executive and medical charge of the Chanda District Jail.

MAJOR J W GRANT, I.M.S., Residency Surgeon in the Western States of Rajputana, is appointed to hold charge of the current duties of the office of Resident in the Western States of Rajputana, in addition to his own duties, with effect from the 6th July 1912, and until further orders.

THE following provisionally substantive changes are sanctioned among Agency Surgeons under the Foreign Department —

Consequent on the services of Lieutenant Colonel J R Roberts, C.I.E., Indian Medical Service (Bengal), an Agency Surgeon of the 1st Class, having been placed at the disposal of the Home Department, and with effect from the 11th April 1912.

Lieutenant Colonel P J Lumsden, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd Class to be an Agency Surgeon of the 1st Class.

Captain J R J Tyrrell, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd Class.

CAPTAIN H W PIERPOINT, Indian Medical Service, an officiating Agency Surgeon of the 2nd Class, is posted as Civil Surgeon in the Khyber Agency and Medical Officer, Khyber Rifles, with effect from the 27th July 1912.

CAPTAIN E J C McDONALD, I.M.S., is appointed temporarily to be Civil Surgeon on the Dibrugarh Frontier, with effect from the 29th April 1912.

THE services of Lieutenant Colonel E R W C Carroll, I.M.S., Civil Surgeon, Assam, are replaced at the disposal of the Government of India, Home Department, with effect from the 25th August 1912.

1st Battalion, Calcutta Volunteer Rifles

CAPTAIN DAVID MCCAY, M.B. (Major I.M.S.), to be Major, to fill an existing vacancy. Dated 1st April 1912.

THE services of Captain A Whitmore, B.A., I.M.S., are placed permanently at the disposal of the Government of Burma, with effect from the 12th January 1912.

MAJOR MAXWELL DICK, I.M.S., made over, and Captain Brooke Churchill, R.A.M.C., assumed executive and medical charge of the Meiktila District Jail, on the afternoon of the 4th August 1912.

CAPTAIN W I FINLAYSON, I.M.S., is appointed Superintendent of the Borstal Central Jail, Lahore, *sub pro tem*, with retrospective effect from 1st October 1910. *Punjab Government Gazette* notifications Nos 256 and 257, dated 13th June 1912, are hereby cancelled.

LIEUTENANT COLONEL H S WOOD, I.M.S., Civil Surgeon, Rajshahi, is appointed to act as a Civil Surgeon of the first class, with effect from the 12th to the 31st March 1912 (both days inclusive), *vice* Major E C MacLeod, I.M.S., on leave.

IN supersession of Government Notification No 256, dated the 15th January 1912, it is hereby notified that the services of Lieutenant Colonel B B Grayfoot M D, I M S, were temporarily placed at the disposal of the Government of India with effect from the 22nd January 1912

IN supersession of Government Notification No 1186, dated the 21st February 1912, His Excellency the Governor in Council is pleased to make the following promotions, *vice* Lieutenant Colonel B B Grayfoot, M D (Dui), I M S — Major V B Bennett, M B B S (Lond), F R C S, I M S, to act as a Civil Surgeon of the First Class

Major H Bennett, M B, C M, B S C (Edin) F R C S (E), I M S, to continue to act as a Civil Surgeon of the First Class during the absence on leave of Lieutenant Colonel C T Hudson, M R C S, L R C P, I M S, on pending further orders

Captain A G, Coulth, I M S, to be specialist in Advanced Operative Surgery, 5th (Mhow) Division, with effect from 1st July 1912

Captain W S McGillivray, I M S, to be specialist in Otology, Laryngology and Rhinology, with effect from 27th July 1912

Lieutenant C H Smith, I M S, to be specialist in Advanced Operative Surgery, 1st (Peshawar) Division, with effect from 1st July 1912

Captain A Cameron, I M S, officiating Civil Surgeon on completion of his training in clinical bacteriology and technique at Kasauli to Rae Bareilly

CAPTAIN R F STEEL M B B Ch, I M S, is granted, from the date of relief, such privilege leave of absence as may be due to him on that date and eight months' study leave, in combination with furlough for such period as may bring the combined period of absence up to two years

HIS EXCELLENCY the Governor in Council is pleased to appoint Captain R M Carter, F R C S, I M S, to act as Resident Surgeon, St George's Hospital, Bombay, and Professor of Materia Medica and Pharmacy, Grant Medical College, Bombay, *vice* Captain R F Steel, M B, B Ch, I M S granted leave, pending further orders

THE following notification by the Government of India, Home Department, is republished —

The services of Captain R M Carter, Indian Medical Service, are placed temporarily at the disposal of the Government of Bombay

THE following promotions are made, subject to His Majesty's approval —

Lieutenants to be Captains

31st July 1912

Charles Harold Smith, M D, F R C S

Alan MacDonald Dick, M B, F R C S

Thomas John Carey Evans, F R C S

Maurice James Helgate, M B

Trevor Laurence Bomford, M B

Graham Rigby Lynn, M B

Louis Hope Lovat Mackenzie, M B

John McDougall Eckstein

William Andrew Morton Jack, M F

Alexander Charles Anderson

Duncan Gordon Cooper, M B

David Arthur, M B

William Leonard Forsyth, M B

Keshav Sadashiv Thakur

Mohamed Abdul Rahman

Edward Humphrey Vere Hodge, M B

Gerald Tyler Burke, M B

Herbert Robert Burnett Gibson, M B

Mark Alleyne Nicholson, M B

THE services of Lieutenant Colonel J C White, I M S, Sanitary Commissioner, United Provinces, on leave, are replaced at the disposal of the Government of India, department of education, with effect from the 26th June 1912

MAJOR S H BURNETT M B C M (Abdn), I M S, on return from leave, to be Presidency Surgeon, Second District, and Marine Surgeon and Superintendent, Lunatic Asylum, Colaba

HIS IMPERIAL Majesty the King Emperor of India has been graciously pleased to give orders for the following appointment to the Most Honourable Order of the Bath — To be ordinary member of the Military Division of the 3rd Class, or Companion of the said Most Honourable Order.

COLONEL ROBERT NEIL CAMPBELL, C I E, M B, I M S, Inspector General of Civil Hospitals, Assam

CAPTAIN S H LEE ABBOTT I M S, Civil Surgeon, Feerozepore, was granted privilege leave for one month with effect from the 15th July 1912

CAPTAIN P, S MILLS, I M S, Plague Medical Officer, was posted to Hosharpur on return from leave

CAPTAIN K S SINGH, I M S, Plague Medical Officer, was granted 18 days privilege leave from the 29th July 1912

CAPTAIN HEMPTON ATRINSON DOUGAN, M B, I M S, died at Rangoon on the 25th July 1912

MAJOR D GREFFN, I M S, made over charge of the Presidency Jail to Lieutenant M Galvin, I S M D, on the afternoon of the 31st July 1912

LIEUTENANT M GALVIN, I S M D, made over charge of the Juvenile Jail, Alipore to Major F S C Thompson, I M S, on the afternoon of the 25th July 1912

MAJOR JOHN MULVANY I M S, made over charge of the New Central Jail at Kalighat to Lieutenant M Galvin, I S M D, on the forenoon of the 25th July 1912

MAJOR MAXWELL DICK, I M S, on proceeding on leave, made over, and Captain Brook Churchill, R A M C, received, collateral charge of the Civil Surgeoncy, Meiktila District, on the afternoon of the 4th August 1912

WITH reference to the Local Government's General Department Notification No 242, dated the 30th July 1912, Captain H B Scott, I M S, on transfer from Port Health Department, assumed charge of the duties of the Police Surgeon and Pathologist, General Hospital, Rangoon, on the forenoon of the 31st July 1912

IN the Home Department Notification No 286, dated the 1st June 1912, relating to the grant of privilege leave to Captain F A Barker, M B, I M S, Superintendent of cellular and female jails, and Civil Surgeon, Port Blair, for "with effect from the 15th July 1912 on leave" read "with effect from the 1st July 1912"

CAPTAIN J H MURRAY, M B, I M S, is appointed to officiate as Superintendent of the cellular and female jails, and Civil Surgeon, Port Blair, with effect from the date on which he assumes charge of his duties till the 20th September 1912 and substantively from the latter date

CAPTAIN H B SCOTT I M S, officiating Port Health Officer Rangoon, is appointed to officiate, as a temporary measure as Police Surgeon and Pathologist of the Rangoon General Hospital in place of Captain H A Dougan, I M S, deceased

MR A E KORB, Assistant Port Health Officer, is appointed to officiate, as a temporary measure, as Port Health Officer, Rangoon, in place of Captain H B Scott, I M S, transferred

CAPTAIN H W PIERPOINT, I M S, an officiating Agency Surgeon of the 2nd Class, is posted as Civil Surgeon, Peshawar, with effect from the 28th June 1912

THE services of Captain O A R Berkeley Hill, M B, I M S, are placed temporarily at the disposal of the Government of Madras for employment in the Sanitary Department

The promotion of Major Ernest Reinhold Rost to that rank, notified in the *London Gazette* of the 10th April 1908, is antedated from the 29th January 1908, to the 29th July 1907

LIEUTENANT COLONEL CLARENCE FORBES FEARNSIDE, M B, I M S, Madras, has been permitted by the Most Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 10th September 1912

CAPTAIN R S TOWNSEND, I M S, on plague duty, Alghur, privilege leave for one month and twenty one days from the 16th August 1912

MAJOR W LAISLEY, I M S, Civil Surgeon, was on study leave from the 1st September 1911 to the 15th March 1912

THE services of Captain A T Pridham, M B, I M S, are placed temporarily at the disposal of the Government of Burma for employment in the Jail Department

THE services of Captain H M Brown, M B, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India

THE services of Captain R M Carter, I M S, are placed temporarily at the disposal of the Government of Bombay

MAJOR A C MACGILCHRIST, I M S, is placed, until further orders, on special duty with effect from the 19th July 1912 to investigate the prevalence of Stegomyia in the Port of Calcutta

MAJOR J C S O'LEARY, M R C S, L R C P, I M S Civil Surgeon, has been granted, by His Majesty's Secretary of State for India, furlough for one day in extension of the combined leave granted him by Orders No 2361, dated the 6th October 1910, and No 1319, dated the 11th July 1912

LIEUTENANT COLONEL PULTENEY CHARLES GABBETT, Indian Medical Service Madras has been permitted by the Most Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 26th August 1912

THE Commander in Chief in India is pleased to make the following appointments—

Captain C G Seymour, I M S, to be in charge of the Brigade Laboratory at Dehra Dun, with effect from 1st July 1912

LIEUTENANT M GALVIN Superintendent of the Juvenile Jail, Alipore, is appointed to act, until further orders, as Superintendent of the New Central Jail, Kailashat, *vice* Major J Mulvaney, I M S, on deputation

MAJOR F S C THOMPSON, I M S, Officiating Superintendent of the Central Jail, Alipore, is appointed to act, until further orders as Superintendent of the Juvenile Jail, Alipore, in addition to his own duties, *vice* Lieutenant M Galvin, on deputation

MAJOR E R PARRY, I M S Superintendent of the Central Jail, Dacca, is appointed to be Superintendent of the Central Jail, Midnapore

CAPTAIN W G HAMILTON, I M S Superintendent of the Central Jail, Midnapore on leave, is appointed to be Superintendent of the Central Jail, Dacca

CAPTAIN F H SALISBURY, I M S, Officiating Superintendent of the Central Jail, Midnapore is appointed to act until further orders, as Superintendent of the Central Jail, Dacca *vice* Captain W G Hamilton, I M S, on leave

THE following promotions are made, subject to His Majesty's approval—

Majors to be Lieutenant Colonel

27th July 1912

Patrick Balfour Haig, M B
Ralph Henry Maddox, M B
Edward Victor Hugo, M D, F R C S
Harry George Melville, M D, F R C S E
Herbert Austen Smith, M B
Douglas Richard Green, M D
George McIvor Campbell Smith, M P
Joseph George Hulbert, M B
Francis Edward Swinton
Sidney Harvey Bunnett, M B

Thomas Jackson, M B
Pulteney Charles Gabbett
John Lewis Macrae, M B

Lieutenant to be Captain

31st July 1912

Robert Inglis Binning, M B

MAJOR C F WYMAN, I M S, Officiating Civil Surgeon Dinajpur, is allowed combined leave for one year one month and fourteen days, *viz*, privilege leave for one month and thirty days under article 260 of the Civil Service Regulations, and study leave for eleven months and fourteen days under rules 2 and 6 of the Study Leave Rules with effect from the date on which he may be relieved of his duties

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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BOOKS REPORTS, &c, RECEIVED—

The Statistics of Puerperal Fever and Allied Infectious Diseases By G Geddes M D (Messrs John Wright & Sons Bristol 1912)
Administration Report of the Municipal Commissioners for the City of Bombay, 1911 *Vol 11*
Annual Report of the Executive and Health Officer, 1911
Report of the Bombay Bacteriological Laboratory, 1911 By Major Glen Liston I M S
Notes on the Annual Statements of Dispensaries and Charitable Institutions of Punjab 1911
Elements of Practical Medicine By A H Carter, M D 10th Edition (H K Lewis, Publisher 1912) 6/-
Military Hygiene and Sanitation By Col C H Melville M B R A M C With diagrams (Edward Arnold Publisher 1912) 12s 6d
The Extra Pharmacopoeia of Martindale and Westcott 15th Edition in two volumes H K Lewis Publisher (Vol 1, 14s, vol II 7s, 1912)
Report of the Administrative Medical Officer (Central India Agency 1911)
Surgical After Treatment By L R C Crandon and A Ehrenfried 2nd Edition Revised (Messrs W B Saunders Co 1912)
The Surgical Clinics of J B Murphy, M D Chicago (Messrs W B Saunders Co, 1912)
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Sexual Impotence By A C Acland, M D 11th Edition (Messrs W B Saunders Co, 1912)
Sight Fostering for the General Practitioner By I Davidson London
Statistical Report of the Quilston Polyclinic Isotomised Sea Water, 1911
Report of the Health Officer of Calcutta 1911
A Manual of Post Operative Treatment 2nd Edition Hiesin Suhra wardy (Messrs Thacker, Spink & Co, 1912)
Pallagra History Distribution Diagnosis Prognosis Treatment, Etiology By S R Roberts, M D Illustrated (St Louis, C V Mosby Co, 1912) Price, \$3.50
Public Health Law By W Robertson M D and A McKendrick F R C S (Messrs F S Livingstone Ltdn 1912) Price 5/-
Report of the Outbreak of Cholera in Bombay By Dr Turner Executive Health Officer
Notes on Vaccination in the Punjab 1911 *Vol 1* By Lt Col E Wilkinson, I M S
A Practical Essay on Lobal Pneumonia By C B Fall Dina 2nd Edition Allahabad Press, 1912
Mental Derangements in India By Captain A W Overbeck-Wright M D, I M S (Messrs Thacker Spink & Co 1912) 6/-
The Bacteriology of Surface Water in the Tropics By Major W W Olanosha I M S (Messrs Thacker Spink & Co 1912) Price 7s 8d
Treatment of Infantile Paralysis By O Vulpus M D Translated by A H Fodd, M D Introduction by J J Clarke M D (Messrs Bailliere Tindall & Cox, London, 1912) Price 10s 6d

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM—

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Original Articles

SIXTY CASES OF AMŒBIC DYSENTERY ILLUSTRATING THE TREATMENT BY IPECACUANHA AND EMETINE RESPECTIVELY

BY LEONARD ROGERS, MD, FRCP IMS,

Professor of Pathology, Calcutta

I HAVE already published details of several cases of amœbic dysentery, hepatitis and liver abscess successfully treated by hypodermic injections of soluble salts of emetine (1 and 2) in which the rapidity of recovery from both very acute and very chronic attacks was remarkable. What is wanted, however, to enable the merits of the new method to be estimated, is a consecutive series of cases of amœbic colitis compared with a similar series in which the well established treatment with ipecacuanha has been used. This desideratum I propose to supply in the present paper, which will deal with thirty consecutive cases under my care in the Isolation Ward of the Medical College Hospital in which ipecacuanha was used, and twenty-six in which emetine was administered. Before dealing with this material it will be well first briefly to discuss the prevalence and differential diagnosis of amœbic colitis as I have found the new treatment to have little or no effect on bacillary dysentery, so that unless the nature of the disease is first ascertained the drug is liable to be unjustly condemned owing to being ignorantly used in the wrong class of case, which would be equivalent to saying that quinine is no use in malarial fever because it failed to control the pyrexia of a case of typhoid wrongly diagnosed as malaria. That this warning is by no means superfluous I already have evidence

THE PREVALENCE OF AMŒBIC DYSENTERY IN INDIA

As I am dealing with the prevalence of amœbic disease in India at greater length in another communication, the somewhat scanty evidence at hand will be only briefly summarised here. An analysis of nearly 150 dysentery *post mortems* performed by me at the Medical College Hospital shows that the majority of deaths due primarily to dysentery were of the amœbic variety, while if terminal bacillary cases and amœbic colitis complicated by liver abscess are included then the mortality produced by the amœbic disease in Calcutta is almost twice that due to bacillary infection. Greig and Wells (3) have shown that the protozoal kind is also the more frequent in Bombay, while I am informed that during the Abol Expedition ipecacuanha treatment proved much

more efficient than salines, so that it is clear that the amœbic disease is the common type in the damp hot parts of India. In Jails Forster (4) found a preponderance of bacillary disease, but also some amœbic cases, while I have met with the latter variety in a Calcutta jail during the present year, so more work is required in these institutions before the true relative prevalence will be known.

Once more, as I demonstrated as early as 1902, tropical or amœbic liver abscess is solely related to the protozoal disease and never originates from bacillary dysentery, so that wherever large liver abscesses frequently occur there we may safely conclude that amœbic dysentery is also prevalent. Utilising this test I have worked out the proportion of liver abscess cases to dysentery admissions in the British Army for the ten years 1901-10, and find that the rate for the whole of India is one liver abscess admission to seven dysentery ones, a very high ratio which can only be explained on the supposition that amœbic dysentery is widely prevalent over India, and is probably the preponderating form. Moreover the same figure for the previous decade was only 1 to 14½, due to the dysentery admissions having recently fallen by one half, while the liver abscess ones have slightly risen. This may be due to sanitary advances having reduced the incidence of bacillary dysentery, just as typhoid due to the same class of bacilli has fallen, while but little affecting that of the amœbic form. If this is the case it is still more likely that the amœbic disease is now the commoner form in the British Army in India. Once more, the proportion of liver abscess to dysentery admissions from 1901-10 was very similar all over India. Indeed from steamy Bengal to the very dry Punjab and also all over Central India the figure only varied between 1 to 6 and 1 to 7, strongly indicating that amœbic dysentery is a common disease in the dry as well as in the moist parts of the country.

During the last nine months I have been carefully investigating the dysentery cases under my care, and find that over two-thirds of them were undoubtedly amœbic, while there was a marked increase in the proportion of this variety with the onset of the monsoon rains, so that the proportion may be still higher when a full year's records are available.

Enough has been said to prove that now as rapidly effective specific treatment is available for amœbic dysentery, it has become a matter of urgent practical importance to all medical men working in tropical and sub-tropical countries to familiarise themselves with the clinical and microscopical methods of differentiating between the two great classes of dysenteries, without a knowledge of which they will not be able to do justice to their patients.

SOME POINTS IN THE CLINICAL DIFFERENTIATION OF AMŒBIC COLITIS

The term dysentery as applied to amœbic disease of the large bowel is not infrequently dangerously misleading, as dysenteric symptoms are by no means always result, and such cases are very liable to be overlooked and allowed to drift on until serious hepatic or other complications ensue. This fact is forcibly brought out by the simple statement that out of 45 cases of primary death from amœbic dysentery among one thousand *post-mortems* at the Medical College Hospital, in no less than 18, or 40 per cent, the clinical diagnosis was not even dysentery at all, although all but four of these cases were over two days in hospital. The most frequent erroneous designations were "diarrhoea", "tubercular diarrhoea" and "peritonitis," the latter in the very severe cases with spread of the inflammatory condition to the serous coat of the bowel. In considering the clinical differentiation of dysenteries, it is therefore necessary to emphasize the important fact that, although certain signs may suggest the presence of the amœbic form of the disease, it cannot be recognised with certainty without microscopical confirmation, while this insidious and frequently deadly disease can never be excluded without proof by repeated examinations of the stools of the continued absence of pathogenic amœbæ. The following remarks on the clinical differentiation of the dysenteries must be read in the light of the foregoing statement, and it must constantly be borne in mind that there is no pathognomonic symptom of amœbic disease, and none which may not mislead if trusted to alone. I hope before very long to deal at length with this difficult subject in a work on dysenteries I have for some time been engaged on, but hope the following data, based on a series of 56 cases with careful notes and microscopical examinations of the evacuations, may meanwhile be of some help to others practising in India and elsewhere in the Tropics.

Fever and Constitutional Symptoms—Even in first attacks of amœbic dysentery fever is about as often absent as present, and is seldom more than a slight intermittent rise to from 100 to 102°F for a day or two. In a few very severe cases remittent fever may occur, the prognosis in such cases being much more grave. On the other hand, in acute bacillary dysentery fever of several days duration, with considerable constitutional disturbance, is the rule at the onset of the disease, although the pyrexia has often passed off before a patient comes to hospital. In chronic dysentery slight intermittent fever is only occasionally seen in the amœbic disease, and is also frequently absent in the bacillary variety although in the latter an evening rise

to between 99 to 101°F is often an indication that the morbid process is still active, an exacerbation of the bowel symptoms accompanying even such slight febrile paroxysms. In chronic amœbic disease the appearance of an intermittent type of fever should always excite suspicion of some complication, usually hepatic in nature. If the spleen is much enlarged complication with malaria or kala-azar may be the cause of fever.

Abdominal Symptoms—Pain in the region of the navel, griping in the abdomen and tenesmus—that is, severe straining during the passage of the stools—are frequent in both forms of dysentery, but in my experience the last is more common in the bacillary form, as the rectum not infrequently escapes attack by the amœbic disease for some time at any rate. Very numerous stools without tenesmus is, therefore, often a point in favour of the protozoal disease. Of more importance is localised abdominal tenderness and distinct thickening of the bowel detected by palpation. The sigmoid flexure is commonly tender and slightly thickened in both forms, especially in chronic cases, but if there is also marked pain on gentle pressure in the right iliac fossa, and still more if the cæcum can be felt as a tender thickened mass, the disease is much more likely to be amœbic in origin. In the most serious type of this disease sausage-like very tender masses of greatly thickened bowel may be felt anywhere in the course of the large intestine and is a sign of extensive involvement of all the coats of the great bowel, including its peritoneal covering, and unless the true nature of such cases is early detected and very full doses of the specific drug administered without delay, such cases are likely to prove fatal within two or three days. When the cæcum is chiefly involved these cases are very likely to be mistaken for appendicitis, with disastrous results. It should also be remembered that such acute attack may occur as acute exacerbations in a chronic amœbic dysentery. After death in such a case the wall of the large bowel may be half an inch in thickness in places and so much softened as to resemble damp blotting paper and be often impossible to remove without rupturing the tube. Yet during life no actual perforation may have taken place, although the presence of patches of lymph on the surface of the bowel shows the presence of local peritonitis.

The Diagnostic and Prognostic value of the blood changes—The great value of the leucocyte changes in dysenteries has not yet been adequately recognised. Space will not allow of my dealing fully with the large amount of material I have accumulated on this point, but I may briefly summarise the more important conclusions I have arrived at. In the first place, in amœbic dysentery either an actual or a relative leucocytosis is rarely absent. Thus out of sixty

consecutive cases in my ward (including four still in hospital and not therefore shown in the tables) an actual leucocytosis was found in three-fourths of the cases, while a relative one (that is one in which owing to the presence of anæmia, reducing the number of the red corpuscles, although the total leucocytes do not exceed 10,000 per c cm, yet the ratio of the white to the red corpuscles is greater than the normal maximum of 1 to 500) was present in 8 more, leaving only seven, or 11.4 per cent without even a relative leucocytosis, and one of these also suffered from kala-azar, while two more had enlarged spleens probably due to that disease which accounts for their few leucocytes.

On the other hand, among 21 recent cases of dysentery in which I could find no amœbæ, most of which yielded other evidence of being bacillary in nature, in only three was any actual leucocytosis found, two of these being very severe cases and all of them recent acute ones, while in two more a relative increase of the leucocytes was present, leaving 76 per cent with no increase in the leucocytes. The presence, then, of leucocytosis is a point in favour of a diagnosis of amœbic dysentery, while its absence is very much against that type being present unless some leucocyte reducing disease such as kala-azar is also present.

The degree of the increase of the leucocytes is also of great prognostic as well as diagnostic significance. In the first place, four out of the seven cases without any leucocyte increase proved fatal, usually with gangrene of the bowel, although over three-fourths of the total series recovered, so that an absence of leucocytosis in a severe case is of very bad prognostic import, being a sign of feeble resisting powers. Secondly, the very high degree of leucocytosis commonly met with in amœbic disease is very striking, for in no less than ten cases out of sixty over 30,000 white corpuscles were present per c cm, and in seven more between 20,000 and 30,000. Yet in 21 non-amœbic cases in no single case were 20,000 found, and in only one over 15,000, although higher counts have been occasionally recorded in bacillary dysentery by others, but as a rule only in recent acute cases with well marked fever, which are not likely to be mistaken for amœbic disease.

Once more, a count of 25,000 leucocytes and upwards is of very serious prognostic significance, for only one out of nine such shown in the table of cases treated with ipecacuanha was cured, while of four discharged "otherwise" only one had improved under it while in hospital. On the other hand out of five cases treated with emetine injections four recovered the fatal case giving a count of 61,750 and succumbing in less than twenty-four hours after admission before the drug had a chance. These results are a striking

testimony to the value of the new method in these terribly acute cases which I had previously come to look on as almost inevitably fatal. Such degrees of leucocytosis can be detected by a glance at a blood film, so it only takes a few minutes to detect them, while when found it furnishes a clear indication for immediate and full doses of emetine hydrochloride hypodermically one grain being given immediately and repeated once or twice in the twenty-four hours. In fact I look on such high leucocyte counts in amœbic colitis as of equal prognostic significance as finding very numerous malignant tertian parasites in every field of the microscope in malaria, for like the latter it enables the dangerous nature of the infection, and the necessity of especially vigorous specific treatment being at once adopted if the patient's life is to be saved, being recognised early even when the clinical signs are deceptive.

Lastly, the percentage of polynuclear leucocytes is shown in the tables, but is of less importance than the other points. Except in some chronic cases they are increased, the proportion being usually highest in very acute infections, but very rarely exceeds 90 per cent.

Characters of the Stools—It is not safe to rely on the appearance of the stools for the differentiation of the two kinds of dysentery, for there are no constant and characteristic differences. Nevertheless, as a general rule if there are separate large rosy blood-stained masses of mucus constituting all or most of the evacuation amœbæ will very probably be found, while when large white masses of mucus or small translucent raw white-of-egg-like pieces alone are present, intimately mixed with loose faecal matter the case is more likely to be bacillary in nature, although there are many exceptions to these statements. It should not be forgotten, however, that in amœbic disease diarrhoeal stools, without either blood or mucus may show numerous pathogenic amœbæ, so that the foregoing observations afford only very rough indications to be confirmed or otherwise by microscopical tests.

Examination of the Stools for Amœbæ—It will be gathered from what has already been said that the only way in which amœbic colitis can be recognised with certainty is by finding the pathogenic amœbæ in the evacuations. In fact, the microscopical examination of the stools in tropical and sub-tropical regions in diseases of the bowels is an even more urgent necessity than that of the blood in fevers, for in the latter class of diseases four-hour temperature charts will often allow of a correct diagnosis being made with a very fair degree of certainty, while an inspection of the evacuations in the former class will rarely furnish absolutely reliable indications and may be very misleading. Fortunately

the hunt for amœbæ is a much simpler and more rapid process than an examination of the blood for malarial parasites, and with the following precautions reliable results can nearly always be obtained with very little trouble.

The stool should be examined as fresh as possible, preferably within an hour or so of being passed, as putrefactive changes may rapidly destroy the activity of the amœbæ, which should be seen in an active condition to enable them to be identified with certainty in an unstained specimen, for large mucous cells, frequently seen in bacillary dysentery, and which may otherwise be easily mistaken for quiescent parasites by the inexperienced. Further, full doses of ipecacuanha or emetine should not be given before the amœbæ are sought for, except in urgent cases, as the amœbæ rapidly disappear under such treatment just as malarial parasites do with quinine. A single examination is not sufficient, as I have several times failed to find the protozoa one day, when they were numerous on the following day. In 42 per cent of my cases the amœbæ were so numerous in the blood-stained mucus thinly spread out under a cover-glass that they were seen in nearly every field of the microscope, while in 90 per cent they were present in sufficient numbers to permit them to be found within two or three minutes. In the few cases in which they are scanty the search is much facilitated by mixing a small drop of one per cent watery solution of methylene blue with the mucus and examining immediately, when the pus and epithelial cells will be found to have taken the stain, while for a time the amœbæ resist it, and thus stand out as clear active organisms amid their blue surroundings. I have recently discovered that by this method they can with a little practice be detected with a half inch lens, a higher power being turned on to confirm the find. I have also spotted them in a fresh specimen with the $\frac{1}{2}$ inch power and a fully-lowered condenser as glistening particles, and proved their presence with a greater magnification. The advantage of this plan is that a considerable piece of mucus under a full-sized cover-glass can be completely searched in two or three minutes, and the organisms readily discovered when quite scanty in numbers. A second piece of mucus should be examined before a negative result is recorded.

It may be objected that non-pathogenic amœba coli may be easily confused with the active causal amœba of dysentery and lead to an erroneous diagnosis of amœbic colitis. Little or no harm would result from the use of emetine in such a case, as the failure to get great improvement within two or three days would lead to the detection of the mistake. In my experience it is very rare to find anything resembling the amœba coli in dysentery cases, and if fairly numerous, or

even scanty, large active amœbæ, with clear pseudopodia, faintly marked eccentric nucleus, and containing red corpuscles are met with, the emetine treatment has always proved rapidly effective.

RESULTS OF TREATMENT WITH IPECACUANHA

As Docker showed in 1858 sixty grain doses of powdered ipecacuanha are remarkably efficient in curing early acute cases of amœbic dysentery in good subjects, such as the British soldiers, he had to treat in Mauritius. Unfortunately his successors have commonly been satisfied with very much smaller doses, and partly owing to this and partly to its failure in bacillary cases the drug temporarily lost much of its repute. More recently it has been recognised as the specific treatment for the amœbic disease, but is still too often given in insufficient quantities to obtain rapidly its full effects. Personally I venture to differ from Sir Patrick Manson's advice to begin with a full dose and decrease it by five grains each day, as in many severe or chronic cases met with in India this plan does not administer enough of the drug to get a complete cure with a single course of the powder. I prefer to begin with not less than thirty grains, and in bad cases to give that amount twice in the twenty-four hours, and if improvement does not take place within two or three days to increase the amount by ten grains at a time until it does, the precaution of proving the case to be an amœbic one having of course been taken on the patient's admission. Even with such a radical treatment many of the patients admitted to civil hospitals in India present either too acute and fulminant a type, or too chronic and advanced disease to allow of a very large proportion of cures. The data entered in Table I will serve to illustrate these and other points. They have been arranged in three series in accordance with the ultimate result, those who died in hospital being shown first, then those who were discharged "otherwise" uncured, at the request of themselves or their friends, and lastly those discharged cured. In each set the acute cases, namely, those in which the duration of the disease on admission was less than one month, are entered first and are followed by the more chronic cases. In the right hand part of the table the number of days in hospital is shown, after which comes the number of days under ipecacuanha treatment, which in the case of the cured patients is only calculated up to the first day on which the stools became finally free from blood and mucus, many of them having had considerable amounts subsequently to this. It must be remembered that a large proportion of the patients are admitted in a very debilitated and emaciated condition, and some of them practically moribund.

TABLE I
Amebic Dysentery Cases treated with Ipecacuanha

No	Race	Sex	Age	Duration before admission	Type of fever	Maximum daily stools	Red Corpuscles	White Corpuscles	Ratio of white to red	Polynuclears per cent	Days in Hospital	Days on Ipecacuanha	Grams Ipecacuanha	RESULT
1	N	M	19	3 weeks	Rem	15	4 750,000	8,750	1-341	72.0	1	2		Died
2	H	M	35	8 days	Int	29	6,100,000	11,000	1-362	86.4	2	2	80	"
3	M	M	30	1 month	Nil	20	3,200,000	30,200	1-106	75.6	2	2		"
4	M	M	15	2 months	Nil	15	2,940,000	35,750	1-82	76.0	1	1		"
5	H	M	32	7 days	Rem	18	6,010,000	13,000	1-461	71.6	8	2	120	"
6	M	M	30	8 days	Int	25	4,690,000	31,000	1-151	78.8	7	7	260	"
7	M	M	40	20 days	Rem	20	5,290,000	26,000	1-203	81.6	4	3	90	"
8	H	M	30	15 days	Nil	25	3,650,000	4,250	1-859		8	8	410	"
9	H	M	21	8 months	Nil	12	2,300,000	14,000	1-164		8	8	250	"
10	M	M	45	3 months	Int	12	4,450,000	8,000	1-506	72.4	12	7	160	"
11	N	M	—	Chronic	Nil	31	4,340,000	11,750	1-347	82.4	10	6	180	"
12	H	M	32	18 days	Nil	15	5,500,000	32,500	1-164	81.6	4	3	90	Otherwise better
13	M	M	25	6 days	Nil	11	3,220,000	8,500	1-379	58.4	20	20	1,000	" no better
14	C	M	29	10 days	Int	27	3,960,000	25,000	1-118	79.6	10	10	350	" very bad
15	E	M	29	2 months	Int	11	4,700,000	35,750	1-124		3	1	30	" no better
16	H	M	30	7 months	Nil	7	4,870,000	33,750	1-144	87.6	1	1	30	"
17	H	M	38	2 months	Nil	7	4,090,000	12,500	1-327		4	3	180	" very bad
18	M	M	35	10 days	Nil	25	5,580,000	37,250	1-150	85.0	10	9	420	Cured
19	M	M	40	11 days	Nil	11	5,730,000	13,250	1-433	82.4	14	12	480	"
20	M	M	36	15 days	Int	7	5,800,000	7,500	1-507		10	6	360	"
21	N	M	40	14 days	Nil	9	4,230,000	11,750	1-360		9	5	300	"
22	E	F	40	9 days	Nil	7	4,270,000	12,000	1-356		8	5	180	"
23	M	M	55	1 month	Int	29	3,440,000	15,500	1-222		26	15	460	"
24	M	M	20	1 month	—	17	3,840,000	9,750	1-394	74.4	16	13	360	"
25	H	M	21	Chronic	Int	20	2,730,000	7,250	1-376	72.8	19	8	270	"
26	M	M	29	5 months	Int	16	3,860,000	21,500	1-181	74.4	7	7	220	"
27	N	M	32	14 months	Int	22	3,280,000	10,000	1-328		18	10	400	"
28	H	M	25	1 1/2 years	Int	13	2,610,000	12,500	1-209	53.6	60	44	1,320	"
29	H	M	15	1 year	—	9	4,330,000	13,000	1-333	44.8	7	7	140	"
30	H	M	36	3 months	Nil	5	3,280,000	14,750	1-239	81.6	9	7	370	"

TABLE II
Amebic dysentery cases treated with emetine salts hypodermically

No	Race	Sex	Age	Duration before admission	Type of fever	Maximum daily stools	Red corpuscles	White corpuscles	Ratio of white to red	Polynuclears per cent	Days in hospital	Days emetine to cure	Grams emetine to cure	Further emetine	RESULT
1	H	F	45	12 days	Int	26	5,960,000	22,250	1-268	88.4	2	2	3 1/2		Died gangrene
2	H	F	45	1 day	Int	12	5,680,000	61,750	1-92	84.8	1	1	1		"
3	E	F	30	7 months	Rem	14					6	2	1	2	" heat stroke
4	H	M	30	2 "	Int	10	3,190,000	8,000	1-399	52.0	17	4	2	2	" cancrum oris
5	N	F	40	5 days	Int	12	5,340,000	11,000	1-381	82.0	9	2	1	1/2	Cured
6	H	M	38	1 day	Nil	6	5,320,000	14,000	1-380		6	3	1 1/2		"
7	H	M	15	15 days	Int	17	3,340,000	10,500	1-318	70.4	7	3	3	1 1/2	"
8	M	M	38	14 "	Int	11	5,560,000	28,000	1-198	66.0	6	4	2 1/2		"
9	H	F	20	6 "	Int	24	1,900,000	2,750	1-72		9	4	1 1/2		"
10	H	M	52	20 "	Nil	11	5,240,000	12,250	1-428	85.2	8	4	4		"
11	M	M	17	10 "	Nil	6	3,820,000	10,250	1-380	78.4	3	1	1	3	"
12	J	F	29	3 "	Nil	7					7	1	1		"
13	H	M	24	1 day	Rem	24	5,560,000	32,500	1-171	89.8	8	1	1 1/2	1	"
14	H	M	32	10 days	Nil	13	5,550,000	13,750	1-404	79.6	11	3	2 1/2	1/2	"
15	H	M	30	5 "	Int	6	2,490,000	5,500	1-483	76.0	5	3	1 1/2		"
16	N	M	30	1 1/2 months	Int	9	6,270,000	30,500	1-206	90.8	11	2	2	1	"
17	C	M	25	6 "	Nil	4	4,900,000	12,000	1-411		6	2	1	1 1/2	"
18	H	F	52	1 month	Nil	13	5,600,000	26,250	1-137	88.8	7	2	2 1/2		"
19	H	M	32	3 months	Nil	16	5,140,000	12,200	1-348	86.8	7	3	1 1/2		"
20	H	M	20	4 "	Nil	14	5,670,000	21,250	1-261	68.8	7	2	2		"
21	H	M	32	1 year	Nil	19	4,030,000	13,750	1-366	90.0	8	3	3		"
22	M	M	20	6 months	Nil	6	5,210,000	13,500	1-385	56.6	7	1	1	1	"
23	H	M	24	2 "	Nil	8	4,010,000	7,500	1-535	73.2	5	1	1	1 1/2	"
24	H	M	22	4 years	Nil	7	3,460,000	11,000	1-314	67.6	7	2	2		"
25	H	M	36	1 1/2 months	Nil	6	3,040,000	9,500	1-320	72.4	9	1	1	1 1/2	"
26	M	F	34	1 1/2 "	Nil	11	3,550,000	8,250	1-430	80.4	6	3	2 1/2		"

Races—M = Mahomedan H = Hindu E = European N = Native J = Japanese C = Chinese

Deaths—No less than 11 out of the 30 cases died in hospital, while six were discharged otherwise, two of whom were very bad and nearly certain to die, and one only was better. Of the eleven fatal cases four died within less than three days of admission, and were hopeless when brought. As the mortality in any given series of cases will largely depend on the accidental factor of the proportion of such moribund patients, they should rightly be excluded in comparing the results of different forms of treatment, for no method can be expected to avail once gangrene of the large bowel and peritonitis have set in. After deducting these four cases in three of which death took place before ipecacuanha was begun, and adding the two removed in a dying condition after failure of treatment of more than three days duration, we have nine deaths among twenty-six cases, or 34.6 per cent, a very high figure, and one which clearly shows the difficulty of getting ipecacuanha into the system quickly enough by oral administration to save many of these grave cases. On the other hand, thirteen patients were cured out of the twenty-six non-moribund admissions, while if we include the patient who left much improved but not quite cured, this would give a percentage of good results of 53.85 per cent, leaving three cases discharged at their own request with no change in their condition after only a short time in hospital.

RESULTS OF THE TREATMENT WITH SOLUBLE EMETINE SALTS

Table II shows twenty-six consecutive cases treated in the same ward by my new plan of administering soluble salts of emetine hypodermically, or in a few of them by the mouth. They are classified in the same way as those in Table I so as to be readily comparable. The first two patients were admitted in a hopeless condition and died under three days gangrene of the cæcum being found in the first case *post mortem*, although an extraordinary improvement in the stools had taken place within forty-eight hours and no amœbæ could be found remaining in the bowel wall after death, having apparently all been killed by the $3\frac{1}{2}$ grains of emetine hydrochloride he had received during life. In the cases of the next two patients the dysenteric symptoms cleared up completely within two days under emetine, but one European female died of heat-stroke some days after being convalescent of her dysentery, and the other, a very anæmic and dropsical subject, developed cancerous oris and died ten days after his dysentery was cured. These two cases, then, are both remarkable examples of the rapid cure of dysentery by emetine in subjects who were so debilitated as to succumb shortly after to other diseases, and cannot fairly be treated as failures

of the emetine treatment. All the remaining twenty-two cases have recovered a remarkable testimony to the value of the new treatment, as they included a number of very severe and advanced cases, while no less than four of them showed the very high degree of leucocytosis, which has already been pointed out as being of most fatal import under the old methods of treatment. The only failures, therefore, have been in the two patients who were moribund on admission, while no case has been discharged "otherwise" at his own request while still uncured. As the emetine series also include a fair number of chronic cases with dysentery of from one month to one year's duration, they are good samples of all types and stages of amœbic colitis.

THE DURATION OF THE TREATMENT AND DOSES REQUIRED

If we take the cases in which a cure was effected as judged by the final disappearance of blood and mucus from the stools we find that the duration of the treatment with ipecacuanha varied between 5 and 44 days, and averaged 11.4 days, during which periods from 140 to 1,320 grains of the drug were taken, the average quantity being 406 grains. On the other hand, with the emetine treatment the stools finally became healthy in from 1 to 4 days, the average time being 2.3 days, while the quantity of emetine taken up to that time averaged 2 grains, and the total amount given while the patient remained in hospital averaged 5.03 grains. The stay in hospital of the ipecacuanha cases varied from 7 to 60 days, the average being 16.4 days, while under emetine it lasted from 5 to 11 days and averaged 7.2 days, which included one day during which they were kept under observation before the specific treatment was begun, unless the condition was an urgent one. I should prefer to keep the patients in longer, but when the dysenteric symptoms regularly disappear completely in two to four days and solid diet then begun causes no relapse it is very difficult to persuade them to stay. I have got a number of them to return to see me after an interval, and so far no true relapse of amœbic disease has come to my notice. One patient of the above series did return and die of dysentery, but after death the upper part of the large bowel showed extensive scars of healed amœbic ulcers, while the lower half revealed an acute bacillary dysentery from which Shiga bacilli were cultivated. In a second similar case in another ward pneumonia was found *post mortem*, together with paralytic dilatation of the cæcum and ascending colon, due to the extensive destruction of the muscular as well as the mucous coats, but only scars and no recent ulcers were present. Yet this man had only received three grains of emetine five weeks before

his death, and he also had a small encysted liver abscess, free from both bacteria and amœbæ, and evidently beginning to dry up. These two cases of apparent relapse only proved that the former amœbic disease had been completely eradicated, and indicate that about three grains of emetine had really completely sterilised all the tissues of the body as far as the amœba is concerned. If further experience confirms these results the emetine salts will constitute the most remarkable therapeutic remedy yet discovered.

THE INTRAVENOUS INJECTION OF EMETINE

The occasional failure of hypodermic injections of emetine salts in the case of very acute sloughing amœbic dysentery dying within less than three days of admission led me to consider the possibility of giving the salt intravenously. In a recent very severe case with great thickening of the cæcum and local peritonitis, I gave a dose of half a grain of the hydrochloride dissolved in five c.c. of normal saline injected very slowly into an arm vein, watching the pulse carefully, and found it did not depress it at all in the least. In the evening I gave two-thirds of a grain in the same way, and on the following day a full grain, in addition to subcutaneous injections, and at the time of writing the local symptoms have much improved, the passage of sloughs has ceased, while the amœbæ disappeared from the stools within twenty-four hours of the first injection, and there is fair hope of his recovery. Whatever the ultimate result may be, it is at least clear that very full doses of the drug may safely be injected intravenously, which is clearly the best plan in these desperate cases. There was no sickness or nausea after the last two large intravenous doses, but bilious vomiting both before and after the first one, so it is clear that the vomiting after ipecacuanha by the mouth is due to a local action on the stomach.

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THERAPEUTIC USE OF TUBERCULIN IN TUBERCULOSIS

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THOUGH the use of tuberculin as a therapeutic agent is the earliest example of the employment of bacterial products for the cure of microbial diseases of human beings, definite and conclusive results have been obtained with it only within recent times. One of the main reasons for this slow progress is due to the causative organism of the disease producing in human beings most

diverse types of malady of markedly varying intensity—in some the disease runs a chronic course lasting for years, in others it kills the patient within a few weeks, some cases are afebrile throughout the course of the disease, in others persistent high fever is the result of the infection. This diversity of symptoms cannot be explained by the varying characters of the germ invading the system. It is always the same or at least of two varieties. It is the system which varies. This all-important point was not thought of in the early days of tuberculin treatment. It has taken the observers rather a long time to arrive at a comprehensive idea of the changes occurring in the system when treated with tuberculin. Even now, this treatment is in a stage of evolution. There is still marked want of agreement among different observers regarding the virtues of the different products of the bacillus, and their indication in particular types of the disease and also regarding the dosage. Most of the workers are, however, agreed on the following points—

(1) To effect a cure a prolonged course lasting for months is required. To expect cure within a few weeks of the commencement of tuberculin treatment will lead to disappointment and positive harm to the patient.

(2) Tuberculin being a toxin and not a performed antitoxin (like diphtheria antitoxin) the aim of treatment will be to produce an active immunity in the system by injecting progressively increasing doses of tuberculin. For the time being, the patient resembles a laboratory animal, in whose system antitoxin is being prepared by injecting increasing doses of toxin. All rules applicable to the latter are applicable to the patient receiving tuberculin. Any deviation from them will do harm to the patient.

(3) Any and every case of tuberculosis is not amenable to tuberculin treatment—only a particular class of case is curable by it.

(4) Treatment by tuberculin gives better and more lasting results than any other method of treatment.

(5) Tuberculin does not produce any immunity in healthy man.

(6) Tuberculin as a therapeutic agent in tuberculosis has not as yet reached the same rank as diphtheria antitoxin in diphtheria. Much remains yet to be worked out. An idea of its position can be made out from the fact that no one has succeeded as yet in absolutely immunising a tubercular guinea-pig, even though the infection has preceded the treatment by not more than 24 hours.

A good number of cases have been treated by me within the last few years with tuberculin with marked success, and cure has resulted in many

cases Before describing the cases a few preliminary remarks are necessary

Fallacies are liable to occur in claiming for this method of treatment positive cure in any case of tuberculosis First of all is the uncertainty of diagnosis In open tuberculosis cases, the finding of tubercle bacilli in the expectoration leaves no doubt regarding the nature of the disease In closed cases, however we have to depend on clinical signs and the tuberculin test In the latter case some doubts remain regarding the nature of the case, for this test is not absolutely infallible Secondly, there are many cases of undoubted tuberculosis that get cured spontaneously, their number is, however, very limited Thirdly, there remains the uncertainty that a case has been really cured and not simply that there is a partial amelioration of the symptoms for the time being Cases are often seen to recover and show marked diminution of symptom after a time, however, recrudescence takes place and the patient dies from tuberculosis For these reasons a rigid criterion is necessary for declaring a case has been cured by tuberculin

E Lowenstein defines cure of tuberculosis as follows —

(1) Result of physical examination will show anatomical changes in the lungs compatible with healed up lesion of the lungs

(2) Causative organisms must not be found in the sputum after repeated examinations

As regards the preparations of tuberculin employed in my cases, I used old tuberculin, T O A (Human and Bovine) tuberculin, T R (Human and Bovine), Tuberculin B E (Human) according to the indications of the case I may mention here that for some unaccountable reasons, several mistakes have crept into the writings of most of the English authors regarding these preparations old tuberculin of Koch is invariably put down as synonymous with T O A, whereas the two are entirely different preparations The figure representing the doses of T R in the writings of Sir A Wright and his followers previous to the year 1905 has to be divided by number 5 to get at the correct dose, as Prof Wright made a mistake in assuming that the stock T R contains 10 milligrammes of tuberculin, whereas it contains only 2 milligrammes

My guides for the dosages of tuberculin are the course of the fever, weight, and general condition of the patients All my patients except one lived in their own houses, no particular care for providing pure air could be taken The following is a resumé of the results of the cases classified in accordance with the variety and intensity of infection

I Eight cases of glandular tuberculosis, two of whom were in an advanced stage of the disease—seven cured, one marked improvement, treatment is still being continued

II Five cases of tubercular pleurisy all reacting to tuberculin three cured, one showed distinct improvement, but the fever is still persisting, one showed improvement after the fourth injection, fever stopped Injection had to be discontinued There was a relapse, and the patient died of tuberculosis of the lungs subsequently

III Tuberculosis of spine with fever—reaction positive—case cured

IV Tuberculosis of skin—one case cured

V Tuberculosis of joint—one case cured

VI Tubercular Laryngitis—two cases one died without deriving the least benefit, the other showed distinct improvement

VII Affection of the lung with no distinct physical sign, sputum showing no tubercle bacilli—Reaction positive, two cases—both cured

VIII Affection of the lung with distinct physical sign Tubercle bacilli present in sputum, with slight rise of temperature in the evening—altogether twelve cases treated, six definitely cured, five showing distinct signs of improvement, there is every expectation that they will be cured—the course of treatment not being completed as yet (One showing no improvement)

IX Affection of lung, with signs of excavation of lung Tubercle bacilli present in sputum—nine cases one cured, one progressing remarkably well, seven cases showed no improvement and have died

X High fever—no definite lesion Tuberculin reaction positive—six cases, extremely minute doses tried without the least benefit

XI High fever, with no definite sign in the lung, but tubercle bacilli found in sputum—six cases no improvement, four have died, two still lingering

The cases which I call 'cured' satisfy the definition of 'cure' given by Lowenstein They have resumed their ordinary avocation I stopped the treatment in four, years have passed, in two, three years, in six, one year, and in twelve, six months have passed I have not lost sight of any of these cases

The conclusions which I am justified in drawing from the above results are as follows —

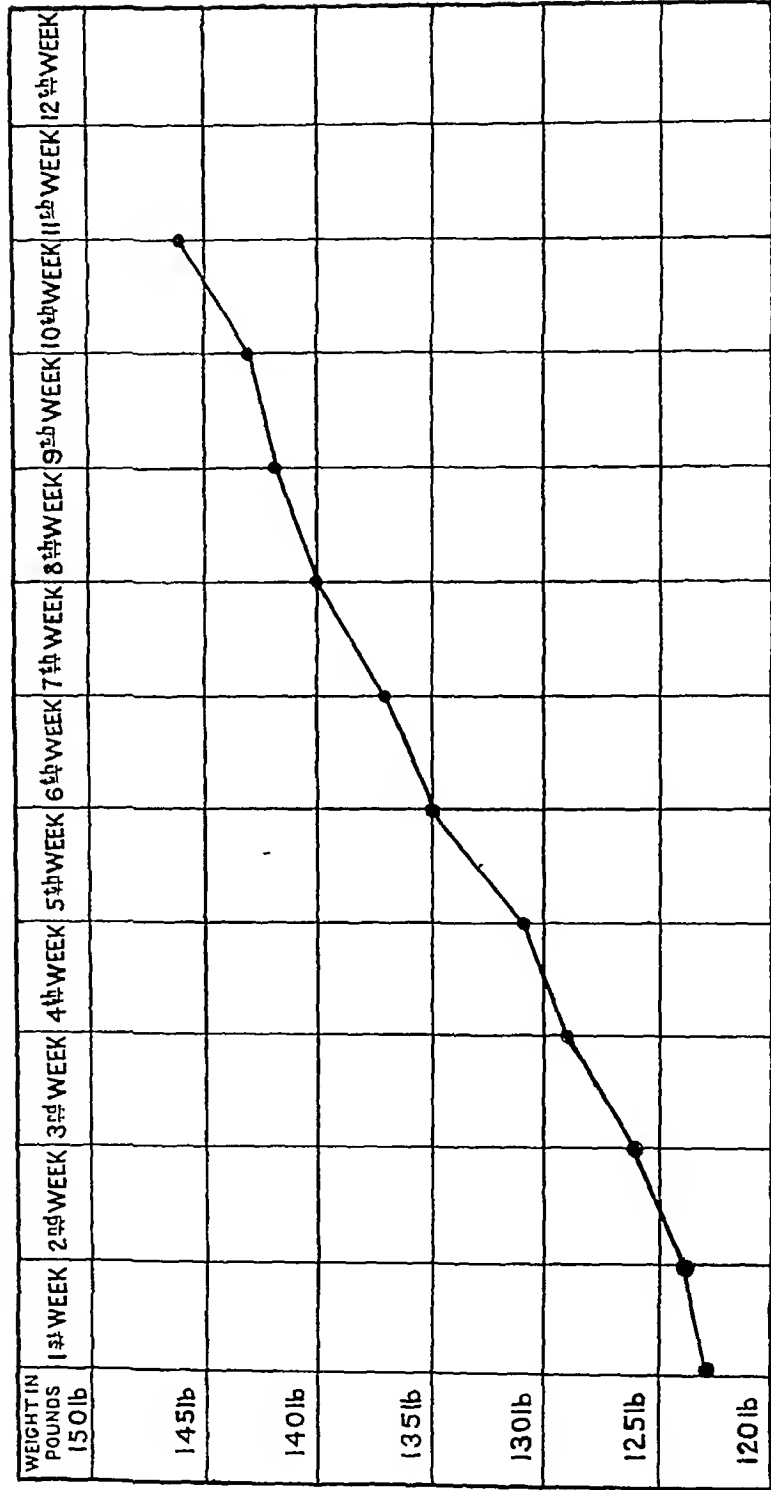
In glandular cases uncomplicated with high fever, success is cent per cent

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Chart showing rapid and steady increase of weight after tuberculin injection Case No. 10, Table A



In tubercular pleurisy without marked febrile symptoms, the success is also marked. In tuberculosis of lungs with excavation, only one case out of nine was cured. The cases of open lung tuberculosis without marked sign of excavation and without much fever, present however a most interesting study. Of the twelve cases treated, six were definitely cured, they have increased in weight, no physical signs are perceptible, no tubercle bacilli can be found in sputum, there is no cough and no fever. As these form the bulk of cases of tuberculosis and as in these no doubt can remain regarding the diagnosis and as most of these die after prolonged suffering, arrest of the progress of the disease followed by cure cannot leave in one's mind any doubt regarding the remarkable curative property of tuberculin. The physical signs (loose crepitation, dulness and harsh breathing) can be made out diminishing gradually week after week with the progress of the dose of tuberculin. At first the loose crepitations are replaced by dry creaking sounds, dulness diminishes along with the harsh breathing. The creaking sounds are then replaced by rhonchi. In some cases, there is a falling back, due to improper dose or some other not clearly understood cause, then the dry sounds are again replaced by loose crepitation. In one case, after four doses of tuberculin the fever fell from 101° to 99° . Night sweats stopped along with diminution of cough and other symptoms. The physical signs showed the sequence of events as described above. Tuberculin had to be stopped on account of his removing to a hilly climate. After five weeks' stay there, he came back to Calcutta, looking distinctly better. But the temperature has gone up to 100° and the chest examination showed loose crepitation at the apex. After two doses of tuberculin, they became distinctly drier.

These results are as satisfactory as possible under the circumstances, considering that no other special precautions regarding living in healthy surroundings could be taken. These can bear comparison with the results obtained in Health Stations where tuberculin treatment is systematically followed as in the "*Heilstatten Beetz der Landes-Invalider versicherung*" of Berlin where out of 682 cases of open tuberculosis there was cure in 57.98 per cent with new tuberculin, 42.15 with old tuberculin and 55 per cent with both combined. My figures are distinctly better than the result obtained in sanatoria where tuberculin is not used (in German Health Station there was cure in 20 per cent cases), and also compare favourably with the results obtained by use of tuberculin guided by opsonin index as published in Carmalt Jones's book on "Introduction to Therapeutic Inoculation" (the figures being taken from the out-patient

department of therapeutic inoculation at St Mary's Hospital). The result shows that out of 24 cases of tuberculosis of lungs (stages not mentioned) four were cured and nine were much better. I would like to mention here that I did not use the opsonin index in any of my cases. I do not wish to enter into a discussion regarding the merits of this method of tuberculin treatment. I may mention here, however, though it would look like heresy to the followers of the method discovered by Sir A. Wright, that tuberculin treatment as is now carried out, beginning with small initial doses gradually increasing to big doses, was in vogue in Germany long before Sir A. Wright popularised it in England, besides the published results of the opsonin method of tuberculin treatment are not convincing enough for the workers, whether English or foreign, to adopt it as a routine practice.

Lastly I should like to say a few words regarding the abuse of tuberculin. It is a very potent drug and is capable of doing incalculable harm. Those who believe that old tuberculin of Koch is dangerous and the new preparations are harmless do not know the whole truth. I have known of several cases of incipient tuberculosis taking on a rapid course after injudicious doses of tuberculin. Similar is the experience of others. Dr Baldwin makes the following remarks in the "Monthly Cyclopædia of Medical Bulletin 1909": "Yet there is danger from ignorant and reckless exploiters who will throw discredit upon the conservative men who are proceeding cautiously with the hope that time will furnish still better indications to govern immunising methods of treatment."

So that in using tuberculin great circumspection is necessary. That the proposal of the Health Department of this city to establish a dispensary for doling out tuberculin to indigent tubercular patients is not a very wise one, will appear from the fact that a similar proposal promulgated by the States of Nebraska raised a storm of indignation from such eminent men as Professor Knoff, Professor Welch, Dr W. S. Thayer and Dr Simson Flexner. The remarks of the last-mentioned savant in this connection are as follows—

"I desire to state that I do not believe that we possess at the present time any experimental or observational basis which suffices to justify any federal, state, or municipal legislation in prescribing any form of specific treatment of tuberculosis."

I append tables showing concisely particulars of the cases treated successfully by tuberculin. The chart shows the remarkable increase in weight which often follows after tuberculin injection.

TABLE A—OPEN LUNG TUBERCULOSIS CASES

Serial Number	Age and Sex	Family history	CONDITION BEFORE TREATMENT			CONDITION AFTER TREATMENT				Period under treatment	Period elapsed since treatment completed	Variety of tuberculin used	Remarks
			Average highest rise of temperature	Weight	Physical signs and tubercle bacilli	Other symptoms	Average highest rise of temperature	Weight	Physical signs	Other symptoms			
1 (R L)	22 Male	Healthy	99° to 101°	90lbs	Rt apex dull A few crepitations—numerous tubercle bacilli	Marked night sweats, cough, tubercles—expectorations—nummular	98°	10lbs	Healthy, no abnormality in chest signs	No cough, no expectoration, no tubercle bacilli after repeated examinations	3 months	T R & B E,	
2 (S R)	19 Male	Healthy	101° to 102°	88lbs	Dulness over left scapula—loose crepitation, numerous tubercle bacilli	Marked loss of appetite, cough, tubercles	98°	120lbs	Slight impairment, resonance over the affected part	No cough, no tubercle bacilli found	2 years	T R, T O A & B E	
3 (M G)	14 Female	Mother & sister tubercular	102° to 103°	72lbs	Left base dull, loose crepitation, numerous tubercle bacilli	Marked emaciation and prostration—profuse muscular expectoration	Normal	100lbs	No abnormality	No cough, no tubercle bacilli	2 years	T R, Human & Bovine	
4 (K S W)	14 Female	Mother leprotic	99°	80lbs	Left base slightly dull—occasional crepitations, a few tubercle bacilli	Slight cough, marked anorexia	Normal	120lbs	No abnormality	No cough, appetite normal, no tubercle bacilli	4 years	T R	
5 (M K)	22 Male	Healthy	9° for over week 105°	106lbs	Rt apex dull, loose crepitations, tubercle bacilli	Cough violent, marked prostration	Normal	120lbs	No abnormality	No cough, no expectoration, no tubercle bacilli	2 months	B E	
6 R N	26 Male	Healthy	98° to 102°	98lbs	Rt apex dull, fine crepitation	Cough, troublesome tubercle bacilli	Normal	120lbs	No abnormality	No cough, no tubercle bacilli found	6 months	T R & B E	
7 M	30 Male	Healthy	100° to 101°	96lbs	Sign of a cavity in the rt open numerous tubercle bacilli	Cough, troublesome night sweats	99° Occasionally	116lbs	Still sign of cavity but dry	No cough, no tubercle bacilli	4 months	B E	
8 A K	38 Male	Healthy	100° to 101°	106lbs	No definite signs, numerous tubercle bacilli in sputum	Cough, troublesome and loss of appetite and hemoptysis	Normal	124lbs	No abnormality	No cough, appetite good, no tubercle bacilli found after three examinations	2 months	B E	
9 P	35 Male	Brother died of tuberculosis	100°	Not taken	Rt apex, suspicious, a few tubercle bacilli	Cough, emaciation and occasional hemoptysis	98°	Not taken	No tubercle bacilli		3 months		Treatment not yet completed
10 Chakra	29 Male	Healthy	100° to 101°	123lbs	Left supra scapular and scapular region, fine sound	Cough, marked loss of appetite, a few tubercle bacilli	99°	116lbs	A few rhonchi audible in the supra scapular region	Appetite good, cough very little	16 weeks		Treatment not yet completed

TABLE B—EARLY TUBERCULOSIS OF LUNGS (CLOSED)
(*Tuberculosis reaction positive*)

Serial Number	Age and Sex	Family history	CONDITION BEFORE TREATMENT		CONDITION AFTER TREATMENT		Period treated	Period elapsed since treatment is completed	Variety of tuberculin used	REMARKS
			Average highest temperature	Other symptoms	Average highest temperature	Other symptoms				
1 (Ch B)	26 Male	Father died of P P	Continued temperature, rise of 102° to 103° for 3 months	Troublesome cough, loss of appetite, no definite physical signs, no tubercle bacilli found in sputum	Normal	No cough, appetite normal	4 months	6 months	T R	
2 (M N)	14 Female	Healthy	Continued fever, 100° to 101°, 2 months	Signs of bronchitis in both lungs, no tubercle B found	Normal	No abnormal sound in the lungs	3 months	8 months	T R	
3 (G D)	24 Female	Sister died of P P	99° to 100° for 6 months	No physical signs, slight cough, marked emaciation, severe hemoptysis	Normal	Ditto			T R and B E	
4 (P D)	20 Male	3 Members of the family died of T	99° to 100°	Hemoptysis, fever and cough progressive, emaciation marked anorexia	99°	No cough, good appetite	2 months		B E	Treatment not yet completed
5 (A B)	25 Male	Healthy	99° to 100°	Hemoptysis, cough, loss of appetite, marked and rapid loss of weight	98°	No cough, appetite normal	3 months	6 months	B E	

TABLE C—TUBERCULAR PLEURISY

(Tubercular reaction positive)

Serial Number	Age and Sex	Family history	Average highest temperature	Other symptoms	CONDITION AFTER TREATMENT		Period treated	Period elapsed since treatment is completed	Variety of tuberculin used	REMARKS
					Average highest temperature	Other symptoms				
1 (N B N)	17 Male	Healthy	101° to 100°	Whole of the left base showed signs of effusion—then later grating sound	Normal	Except slight impaired resonance, no abnormality noticed in the affected part	6 months	1 year	B E (Bovine)	
2 Bel	76 Male	Healthy	99° to 100°	Left side showed signs of adhesion and collapse of lung—marked dulness—dragging out of the apex of the heart, &c (2 years standing)	Normal	The physical signs remained unchanged	4 months	6 months	B E (Human)	
3 Ghul	16 Female	One brother died of tubercular meningitis	99° to 101°	Rt base dull, breath sounds absent, higher up friction sound (1 year history), progressive emaciation	Normal	Dulness disappeared gradually—no abnormality noticed at the time of completion of treatment	4 months	4 months	B E (Human)	
4 Bhat	30 Female	Healthy	99° to 100°	Loss of appetite progressive emaciation	Normal	Increased rapidly in weight, appetite increased	3 months	6 months	B E	

TABLE—TUBERCULOSIS OF THE OTHER ORGANS
(*Tuberculin test positive*)

Serial Number	Age and Sex	Family history	Condition before treatment	Condition after treatment	Period of treatment	Period elapsed since treatment completed	Variety of tuberculin	REMARKS
1 (D D)	14 Female	Healthy	Glands in the neck and sub maxillary region enlarged; some suppurating getting 100° to 101° in the afternoon, progress emaciation	Fever stopped within a few weeks of injection, the glands subsided, remained shotty Patient gained in weight	4 months	1 year	B E (Bovine)	
2 (D M)	14 Female	Healthy	Continued fever like enteric with beginning, later on hectic type—glands in the neck and axillæ enlarged	Fever gradually came down to normal Glands diminished in size	4 months	6 months	T R (Human)	Has got a relapse of the old type of fever after labor, treatment not yet completed
3 (P W)	22 Female	4 of her brothers died of galloping P	Enlarged glands in the neck, and evening rise of temperature 101° Progressive emaciation	No more rise of temperature, glands have diminished in size	5 months	1 year	B E (Bovine)	
4 (S)	30 Male	Healthy	Fever 101° in the evening, glands in the neck enlarged	Fever has stopped coming, the glands have subsided	4 months		B E (Bovine)	Treatment not yet completed
5 (M)	25 Female	Healthy	Drunk with fever for one year A gland in the left iliac fossa about the size of goose egg Marked emaciation	Drunk stopped, the fever gradually came down At the termination of treatment she was plump and looked picture of health	5 months	1 year	T R (Bovine)	
6 (B R)	24 Male	Several members of the family are tubercular	There is a prominence at the 5th dorsal vertebral spine this spot is tender A cold abscess in the left iliac fossa Temperature 100° to 101° emaciation	The prominence with tenderness in the spine passed away, the fever stopped after the 3rd week The swelling in the iliac region also disappeared	6 months	2 years	B F (Bovine)	
7 (M M)	20 Male	Father tubercular	The second dorsal spine prominent and markedly tender A diffuse swelling in the right intrascapular region, distinctly fluctuating, fever 100° to 101°	After the 4th week the swelling disappeared, the fever stopped The tenderness in the spine not more perceptible	3 months	6 months	B E (Bovine)	

"THE VOLUNTARY BOARDER"

By P. HEFFERNAN,

CAPT, I.M.S.,

Superintendent, Madras Lunatic Asylum

SECTION 4 of Act IV of 1912, which received the authorisation of His Excellency the Governor-General in Council in March of this year, and which is now the law throughout India adumbrates the beginning of a new era in the history of Indian Psychiatry. It marks the recognition of the lunatic asylums as hospitals for mental disease, and, better still, it denotes a change in the point of view from which mental disorder itself is regarded by the leaders of educated opinion in the country.

On the continent of Europe, in America, and in Australia, every effort is now made to treat early and acute cases of mental disease, in suitable institutions, without any certification whatever. Dr Beattie Smith, F.R.C.S., in his address to the Australian Medical Congress four years ago, spoke as follows —

"First and foremost, then, we must recognise that many mental cases are certifiable which should not be certified, and still more are not certifiable, yet need definite treatment. When we recognise that incipient insanity is that condition occurring between the first manifestation of mental disorder and the development of certifiable insanity, and that it also includes cases where the insanity, though obvious, is of recent origin, but not yet permanently established or confirmed, we have a big field to work upon."

Recognising these elementary factors—the state of New South Wales, during the period when Dr Morton Manning was Inspector-General of the Insane, established "Receiving Houses" for uncertified cases of mental disease. Victoria followed suit with a "Receiving House" in Melbourne. New Zealand expunged the term "Lunatic" and "Asylum" from its vocabulary, and speaks of the "Mentally disordered" and its "Mental hospitals."

Many of the American States have done similarly, as regards removing the offensive nomenclature, with its barbarian associations, and its "stigma." Within the past few years, the apathy of even the phlegmatic Briton has been overcome, and Croydon and Cardiff have now their "Hospitals for mental disorders," and the West Riding Asylum at Wakefield has established its out-patient department, which is working with success.

But for an example of the ideal mental hospital, one must go to Germany, and examine, say, the Psychiatric clinic at Munich presided over by Professor Kraepelin. This is a State-supported institution into which between 1,500 and 2,000 patients suffering from different forms of mental disorder are admitted annually, without any form of certification

whatever. There is an out-patient department which deals with about fifty cases weekly. The total number of beds is only 120, but the number of the paid and honorary medical staff number in all sixteen, and those of the nursing staff 52, including 18 male nurses. There are no single rooms in the ordinary sense of the word, but there is a "silent room," a "sleep room," etc., "chemical and clinical laboratories," and all the most up-to-date appliances for treatment, including continuous warm baths, a feature of the institution. Psycho-diagnosis and Psychotherapy are also taught and practised.

There is in addition a State Asylum for certified cases at Egling, which accommodates 1,100.

Similar institutions are met with in France, in Italy, and in the United States of America.

The advantages of such institutions from the medical point of view are obvious. The large medical staff, unworried by administrative work, can devote itself to the personal treatment of the patients. In this connexion, it is worth remembering that cases of mental disorder require much more of the physician's time to treat with the maximum of efficiency than do cases of bodily disease. Using Psycho-analytic and Psychotherapeutic methods, it is impossible to deal adequately with more than four to six cases a day. Such institutions are expensive in staff, equipment, and maintenance, and cannot be seriously considered for India.

The Indian asylums therefore will serve two functions, viz —

1 Hospitals for the treatment of mild, incipient, and acute cases of mental disorder, and

2 Homes in which congenital and incurable cases of mental disease may spend their lives, with the maximum of comfort and safety for themselves and the general community.

It is for the purpose of the first named function that the Clause of Act IV of 1912 will be of such inestimable value.

"Mental Disorders" differ in degree from, for example, mere "facility," or lack of determination and will, to auencephalous idiocy, from the transient excitement of some predisposed persons under the influence of alcohol or *ganja*, to the most violent mania, from the simple melancholias or "blues" of adolescence, to chronic melancholia with delusions and unutterable misery and gloom from trifling eccentricity of manner and dress, to the most anti-social paranoia. "Insanity" is a legal rather than a medical term, and denotes the point in the gradient of mental disorder, at and beyond which, the sufferer becomes incapable of managing himself and his affairs, or becomes a danger to himself or society. "Lunacy" is a barbarous survival from the dark ages of superstition, when witches and warlocks were burned at the stake, when successful men blessed their lucky stars, but the poor insanes

could only curse the unlucky moon under the influence of which they were considered to have been born.

The Royal Commission of the care of the feeble minded has strongly and unanimously recommended that the terms "Lunatic," "Lunacy" and "Asylum" should altogether be abandoned.

Several of the United States of America, many of our Colonies, and some of our counties in England have already made this change. The terms "Mental Infirmary" or "Hospital for Mental Diseases," "Mentally Disordered," and "Mental Disorder" should be substituted. "Insanity" should not be used as synonym for the mental disorder. It has a special meaning of its own. The so-called "stigma" which is still attached to treatment in our public asylums, is almost entirely due to the offensive nomenclature and the legal process of certification. It is our duty to remove that stigma by every means in our power. Already it has lost much of its significance, with the decay of superstition, and the spread of common sense. It is strange what a love the legal mind seems to have for terms "lunacy" and "lunatic," and yet we must not think too hardly of these gentlemen in horse hair and silk, for our own emancipation is not of very long duration. Tanzi says that in the first thirty years of the nineteenth century, Germany possesses only one book on Psychiatry, and in it "Hennoth consigned the insane to the wrath of God as conscious rebels who had parted with their soul to the devil."

The Voluntary Boarder is, of course, not insane, in the legal sense, on his admission, nor whilst under treatment. He does not lose any of his civil rights, any more than does the patient in any other civil hospital. He is expected to abide by the rules of the institution while under treatment, and can leave at any time on giving twenty-four hours' notice in writing. He can be discharged at any time by three of the Official Visitors to the asylum, even against his will.

Since the present Act came into force, there have been four Voluntary Boarders admitted to the Madras Asylum. As such cases are private, it would be a breach of confidence to specify the form of mental disorder from which each suffered—one left completely recovered, one left at his own request unimproved after a stay of ten days; and two remain. The number is small, but it is a beginning. Rome was not built in a day.

It is, of course, obvious that with our present insane population, and our accommodation for the treatment of mental disorder in India, we are only playing with the fringe of the subject. According to the census of last year, the population of the Madras Presidency is 42 millions, of which eight thousand are returned as insane. The population of England, according to the latest available statistics, is 32,121,263, out of which 105,458 were actually

confined in Lunatic Asylums, or were otherwise under restraint for mental disease. Now we cannot accept the conclusion that insanity is twenty times commoner in England than in the Madras Presidency. Here, again, the argument of relativity comes in. What is insanity in England is not necessarily insanity in Madras. To the alienist mental disorder is an absolute term denoting a certain and absolute condition. But to public opinion in Madras, as elsewhere, insanity is a relative condition denoting a certain—but very considerable—degree of deviation from what is accepted as the normal. Mania, marked delusional conditions, and considerable congenital mental defect are recognised as such. But melancholic conditions are looked upon as manifestations of 'Pytham' or 'the bile,' a strange commentary on the etymology of melancholia, denoting that there is nothing new under the sun. The psychasthenias, hysteria, and the parasyphilitic diseases are obviously not recognised as mental disorders. Fifty years hence, our successors will smile at our statements regarding scarcity of the parasyphilitic dementia in India, just as we do at our predecessors of only fifteen years ago, who told us that enteric fever was unknown amongst the natives of India. With the spread of education and the consequent raising of the normal standard, the proportion of recognised insanies is bound to increase, and eventually the problem of the mentally disordered will have to be faced in India, just as it has had to be faced in every civilised country in the world.

In other words, Psychiatry in India is now in the same position as it was in Europe fifty years ago—that is to say—as far as the bulk of the Indian population is concerned. Without in any way minimising the peculiar difficulties which arise, and which are due to the different standards of conduct, ethics, and religion, which obtain, there is little doubt that Indian alienists start with a tremendous advantage over their European brethren of fifty years ago. There are not the same fallacious dogmas to forget, the same vicious practices to eschew, while there is much indeed to learn, there is at least little to unlearn. So far from looking upon the sufferer from mental disease as one who, in the language of Hennoth "has parted with his soul to the devil," the Indian believes that his relative who has become "pytham" or "dewam" is under the special protection of Providence, a charitable and a kindly idea. It is easier to deal with the powers of light than with the powers of darkness.

The institution of the Voluntary Boarder, the patient who recognising his mental malady wishes to be cured, comes at a most opportune time. It behoves all concerned to try and make it a success, to put no obstacles in the way. There will be difficulties in the differences of caste, habits and language, etc., which

will have to be overcome. In the absence of organised public charity, or private philanthropic enterprise, there will be a more serious difficulty in providing suitable accommodation, sufficient medical staff and capable nursing. But such obstacles must yield to time and perseverance. The idea is sound at bottom, the details necessary for carrying it into practice will gradually arrange themselves.

TREATMENT OF SMALL POX BY TINCTURE OF IODINE

By I F PEDLEY, M.D.,
Rangoon

WITH reference to Dr. Newell's note upon the treatment of small-pox by tincture of iodine, in the current number of the *Indian Medical Gazette*, the effect of its use in a recent case of mine was so remarkable that I brought the subject before the June meeting of the Burma Branch of the British Medical Association, and have much pleasure in adding my testimony to the value of this method of treatment.

One of our Little Sisters of the Poor was attacked by this disease and suffered very severe premonitory symptoms.

I had recently revaccinated all the Sisters in the Home, and was thrown off my guard when this one became very ill and delirious with a temperature of 106°F. I at once had her put into wet sheets and kept there day and night not knowing what was going to happen, when spots began to appear on her forehead and hands, and the fever subsided. I then found that at the time of the vaccination of the dozen others, this Sister was away in Moulmein. She had just returned, having contracted the disease there.

I seldom get a chance of treating a case of small-pox, but I had been on the look-out for an opportunity of using iodine, for I felt that its penetration of the thin covering of the vesicles would have the effect of destroying the activity of the micro organisms contained in them.

On the first appearance of the spots I painted them wherever they occurred with equal parts of tincture and liniment of iodine. After three days I changed this to the tincture alone, using it twice a day. The rash was profuse on the face, chest, arms and hands. The patient found the application of the tincture cooling and grateful, and asked for it to be repeated. It was kept up for six days. The result was remarkable and just that described by Dr. Newell. There was no itching, no discomfort, and no secondary fever whatever; the vesicles collapsed and shrivelled, the cuticle peeling off left a clean, white surface, quite free from marks or scars.

While I believe that the course and severity of small-pox may be much modified by keeping down the fever by the thorough and continuous use of cold water, I feel sure that in the application of tincture of iodine we have a most valuable remedy.

A DEVELOPMENTAL DEFECT

By L. COOK, M.D.,
CAPT., I.M.S.,
Civil Surgeon, Bengal

WHEN making a *post-mortem* on a police case brought in from the Mofussil the following interesting condition was discovered—

The deceased was a woman of about 30 years of age, well-built and well-nourished, and her skull had been fractured during an "argument" with some other villagers.

On examination of the abdomen it was found that the right kidney and right ureter were absent. The uterus was smaller than normal and the right Fallopian tube and broad ligament on this side were also absent. The uterus being consequently pulled over to the left side of the pelvis.

The kidney and ureter of the left side were normal except that the former was much above the average in size and weighed about 5½ ozs.

The ovary of the left side was normal and the rudimentary nebulæ of the parovarium of this side were present—but on the right side the ovary was situated above the brim of the true pelvis upon the psoas muscle and from its anterior extremity a fibrous cord was attached which passed downwards and forwards following the brim of the true pelvis to the internal abdominal ring; it had no connection whatever with the uterus.

The condition was evidently due to the non-development of the right Mullerian and Wolffian ducts, but whether or no the primitive secretory organ, the Wolffian body, was ever developed, it is impossible to say.

The interesting feature of the abnormality was the fibrous cord leading directly from the ovary to the internal abdominal ring. This was the remains of the "*plica gubernatrix*"—the upper part of which normally produces the ligament of the ovary and the lower part the round ligament of the uterus, but owing to the non-development of the Wolffian and uro-genital fold on that side (forms the mesosalpinx and primitive broad ligament) the ovary had not descended into its definitive position.

The mesentery of the primitive ovary is joined to the uro-genital fold at the same point from which the *plica gubernatrix* passes off to the groin, and if the uro-genital fold is not developed it is quite obvious that the *plica gubernatrix* will remain in its primitive position and pass directly to the groin instead of being carried down into the pelvis with the uro-genital fold.

The condition was also interesting in the light of the theories of the causation of sex which have recently been brought forward by Dr E Rumley Dawson

According to this author the male ova are restricted to and come only from the right ovary and the female ova only from the left

The deceased woman had borne three children of which two were males and one was a female. So that if this theory has any truth in it, ova must have been discharged from the right ovary into the abdominal cavity and travelled down the left Fallopian tube. That this can occur has been proved by cases of pregnancy in a subject where one Fallopian tube and the opposite ovary have previously been removed by operation

But yet in this particular instance the right ovary, although appearing normal to the naked eye, shewed no pits, scars or cicatrices indicative of ovulation. A microscopical examination would have assisted in clearing up the doubt and I regret that the organ was not preserved

A Union of Hospital Practice

A CASE OF MULTIPLE HYDATID INFECTION OF THE ABDOMINAL VISCERA

By R STEEN, M.D.,

MAJOR, I.M.S.,

Civil Surgeon, Bulandshahr

THE case of Multiple Hydatid Infection published on page 314 of the August number of the *Indian Medical Gazette* reminded me of a similar case met with at Gyantse, Tibet, in May 1905. The patient was a Tibetan beggar boy, about 18—19 years of age. Four years previously he had noticed a swelling in the upper part of his abdomen, and this swelling had gradually enlarged

State on admission

He was a very emaciated creature, almost moribund, with a huge distended abdomen 39 inches in girth. On examination the abdominal cavity appeared to be packed full of tense cysts of various sizes. The larger cysts projected considerably and gave the abdomen a very irregular outline. Over one cyst above and to the right of the umbilicus a distinct thrill was obtained. Two prominent cysts were aspirated and in the clear fluid evacuated hooklets and scolices were obtained. The boy died two days later.

Post-mortem Notes

The Tibetan custom of disposing of dead bodies by cutting them up and throwing the fragments to the vultures is not adhered to in all cases. The bodies of paupers and of the friendless are thrown into the nearest river and the vultures help themselves to the feast. In this case a few rupees purchased the consent of

the "burial party" and a rough *post mortem* was held on the river bank

About two pints of yellowish serum were found free in the general peritoneal cavity. The intestines, liver, spleen and numerous cysts were inextricably matted together by adhesions. The liver was enormously enlarged and extended almost to the level of the umbilicus. The two cysts that had been tapped were now seen to belong to the liver and contained bile-stained fluid. The liver contained an enormous number of cysts varying in size from a child's head to a marble. Three or four only contained daughter and grand-daughter cysts.

The spleen similarly was very much enlarged and proved to be simply a sac of cysts, large and small, of which only a few contained daughter cysts. Among the matted coils of intestine were numerous cysts of all sizes. One large tense cyst almost filled the pelvis.

There was double hydrocele but the fluid was not examined. The kidneys and lungs were not involved. The brain was not examined.

No effort was made to count the cysts, but there must have been several hundreds present. This was the only case of hydatid I met with in Tibet.

SOME NOTES ON AN EPIDEMIC OF DENGUE-FORM FEVER AMONGST INDIAN TROOPS, CALCUTTA

By R S KENNEDY, M.D.,

CAPTAIN, I.M.S.

My apology for publishing these notes, rough and incomplete as they are, is simply an expression of my belief that every little may help in the elucidation and classification of the hitherto obscure Indian fevers.

This disease, which is presumably the same as that which has been raging throughout Calcutta, especially in the northern parts of the City, first made its appearance among the Indian troops towards the end of June.

The first case was admitted on June 27th, 1912. The disease then spread with wonderful rapidity through the 40th Pathans at Alipore (vide chart "A" attached) and, to a lesser extent, through the men of the detachment, 36th Jacob's Horse at Alipore and Ballygunge.

The first case amongst the men of the 75th Carnatic Infantry in Fort William occurred on 29th June, but amongst them it never assumed epidemic proportions.

All the above units only arrived in Calcutta during last cold weather, vide statement "C" attached, which also shews whence they came. A glance at attached chart "B" and statement "C" will show how it affected the admission rate amongst Indian Troops, how very quickly its incidence rate rose and fell and to what extent it affected the different units, etc.

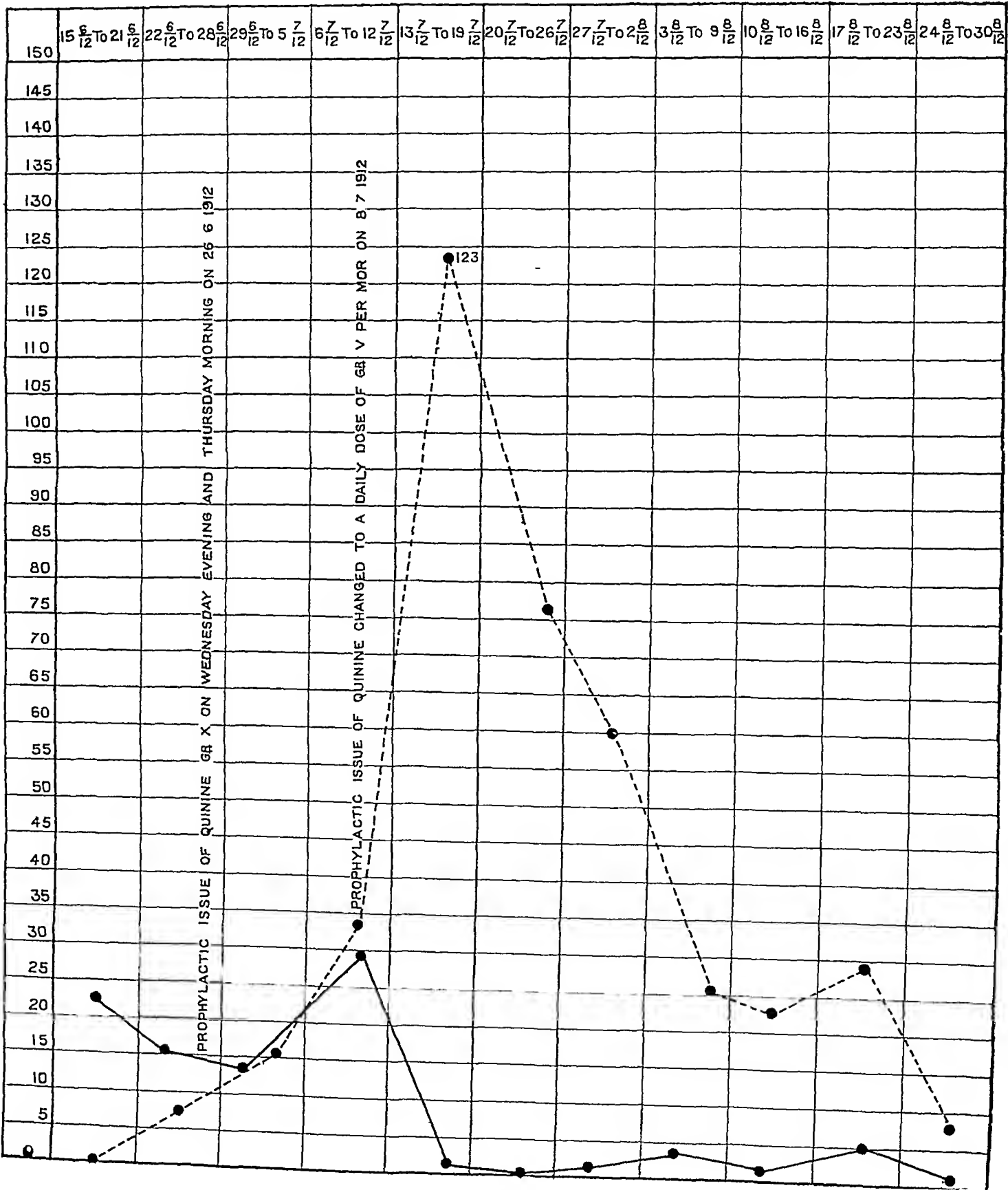
SOME NOTES ON AN EPIDEMIC OF DENGUE-FORM FEVER AMONGST INDIAN TROOPS, CALCUTTA

By CAPTAIN R S KENNEDY, M B, I M S

Chart showing weekly admissions per 1,000 of 40th Pathans, Alipore, for Malaria—Black.

Chart showing weekly admissions per 1,000 of 40th Pathans, Alipore, for Dengue—Dotted.

CHART "A"

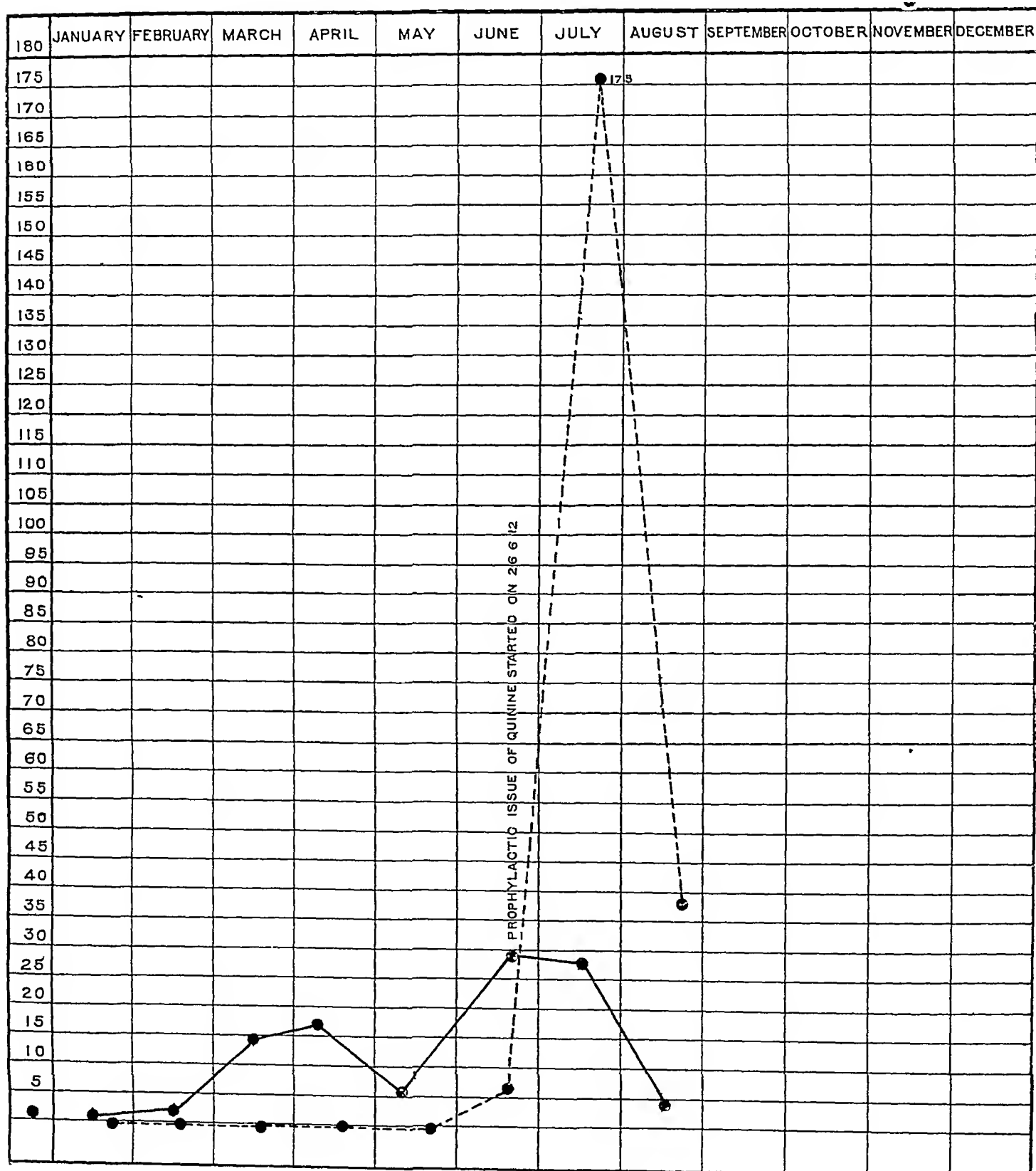


SOME NOTES ON AN EPIDEMIC OF DENGUE-FORM FEVER AMONGST INDIAN TROOPS, CALCUTTA

BY CAPTAIN R S KENNEDY, M B, I M S

Chart showing monthly admission rate per 1,000 of Indian troops at Calcutta during 1912 for Malaria—Black
 Chart showing monthly admission rate per 1,000 of Indian troops at Calcutta during 1912 for Dengue—Dotted

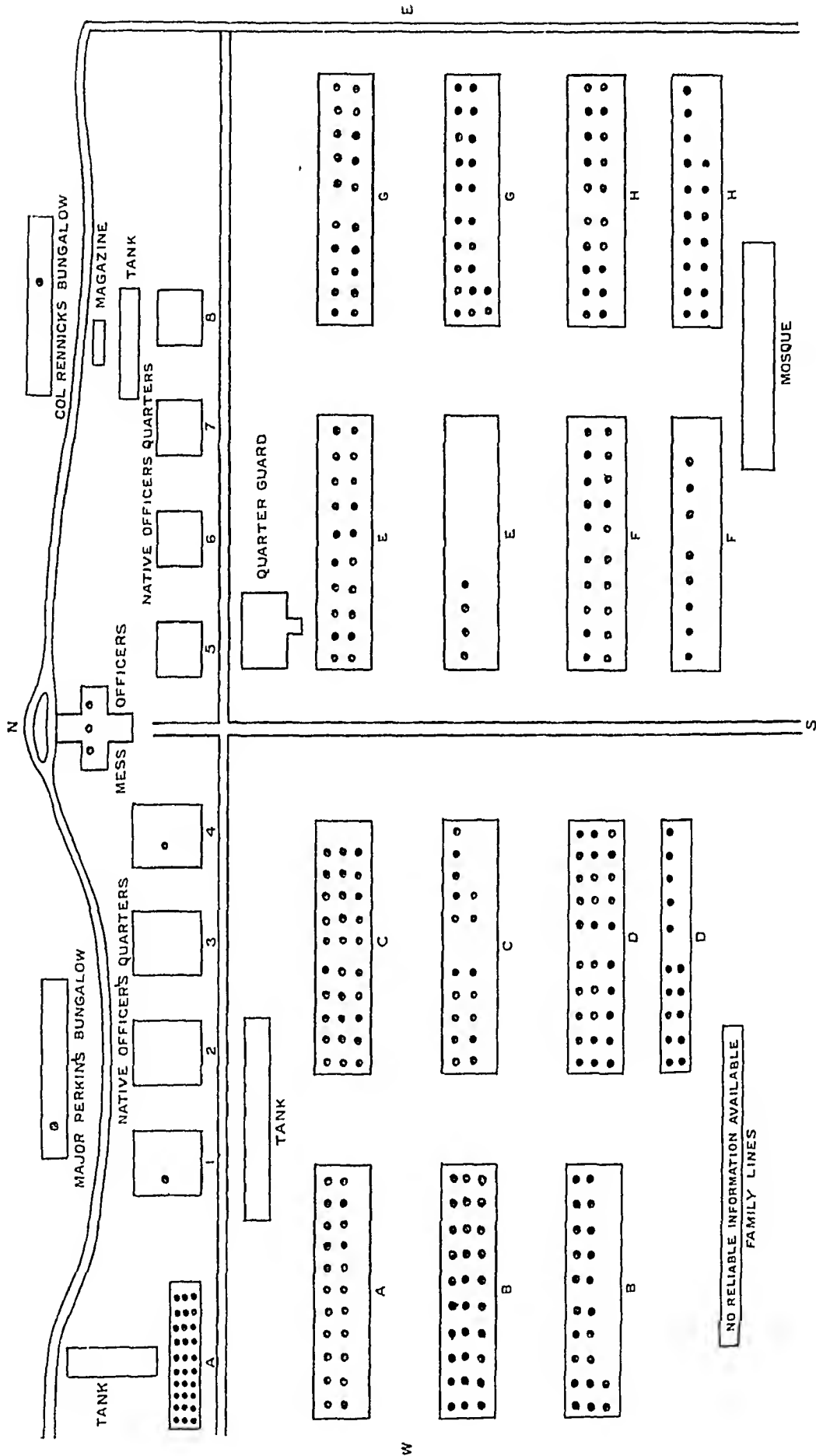
CHART "B"



SOME NOTES ON AN EPIDEMIC OF DENGUE-FORM FEVER AMONGST INDIAN TROOPS CALCUTTA

BY CAPTAIN R S KENNEDY, M.B., I.M.S.

Spot map showing Company distribution of fever in the 40th Pathans from 15th June to 1st September 1912



A dot in one of the two barrack rooms of a Company means that the case occurred in that Company, but not necessarily in that barrack room

In all, up to date, 319 cases were admitted to the hospital for this disease, the majority of these, viz, 194, being admitted during July from amongst men of the 40th Pathans

I now propose to attempt some description of the epidemiological and clinical features of the disease. No one was exempt, it swept from the sweepers' lines to the officers' quarters. Personally, I am inclined to think that the 40th Pathans suffered most severely because they were far from "fit," having had a great deal of malaria in Dehra Ismail Khan, some 8 per cent of them had enlarged spleens at the beginning of the rains.

EPIDEMIOLOGY

The following remarks are founded principally upon observations made in the lines of the 40th Pathans at Alipore—

1 *Causative organism*—That there is a specific organism, there can be no doubt, but up to date I believe all attempts to isolate it have failed. I sent several blood cultures in bile medium, taken at all stages of the disease, to both the Divisional and Brigade Laboratories, but the result in every case was negative.

2 *Distribution*—In the lines occupied by the troops, it shewed no predilection for special localities. Cases occurred all over the lines once it had gained a footing, vide attached spot-map of the lines of the 40th Pathans, Alipore, shewing the company distribution of all cases of fever (it includes a few cases of malaria) which occurred in the regiment between 15th June and 1st September 1912. Of course, the whole lines cover a small area, and from end to end are governed by very similar conditions.

It was noticeable that men in hospital, admitted for other causes, did not contract this disease, though in many cases they were separated from men who had it by a few feet only. True—mosquito nets were used in hospital as far as possible, but then every man of the 40th Pathans, the most heavily affected unit, has a mosquito net in the lines, so it does not seem that the immunity of the men in hospital can be accounted for by the use of the nets. Whenever possible these cases were treated in the upper storey, the hospital being two storied, as also were all other cases, except venereals, who were treated in a special ward on the ground floor. One was forced to the conclusion, therefore, that the carrier, and it looks as though there must be a carrier, does not go above ground floors. Then officers started contracting the fever, and five of them, all of whom lived in upper storeys, went down with it one after the other, so this theory was dashed to pieces and the mystery of the hitherto absolute immunity of men in hospital remains unsolved. Mosquitoes certainly were not common in the hospital.

3 *Racial Incidence*—In the 40th Pathans, where one was dealing with Pathans, Punjabi Mussalmans and Dogias, serving under identical circumstances, one noticed that the Pathans contracted it first and in greatest numbers, then came the Punjabis, and lastly, the Dogias who suffered the least of all. However, there was no difference which could not easily be explained by the varying degrees of fitness of the different races in the regiment. The Pathan does not appear to stand this climate well.

The men of the 75th Carnatic Infantry appear to be much more resistant to it than the men of the 40th Pathans or 36th Jacob's Horse. This is difficult of explanation, as there is no history of the regiment ever having been attacked by a similar disease. It may be that they have a kind of racial immunity.

4 *Question of an insect carrier*—In view of the light which modern research has thrown on the modes of dissemination of many tropical diseases and of the occurrence of this epidemic at a time of the year when biting insects are most numerous, one was naturally on the "qui vive" for an insect carrier.

I think that the immunity of patients in hospital suffering from other diseases, noted above, supports the view that the disease is not directly infectious. With a view of elucidating this question, a rough survey of the biting flies in the lines of the 40th Pathans was made at the end of July. The result was—

(a) *Culices*—Very common—Three species—*Culex fatigans*, *Culex impellens* and another.

(b) *Stegomyia*—Not common.

(c) *Anopheles*—*Myzomyia rossi* common, *Myzomyia barbirostris* a few.

(d) *Chironomidae*—A few.

(e) *Phlebotom*—None found.

I think all these can be ruled out on account of insufficient numbers to explain the very rapid spread of the disease, except one or other of the species of *Culex* or the *M. rossi*. Again, of these latter, I think the *M. rossi* may be ruled out because (1) she, being a night feeder, to a great extent would have been balked by the use of mosquito nets, and (2) she was nothing like as numerous as the *Culices*. This being so I fancy one or other of the species of *Culex* is the culprit, if there is a carrier at all. *Culex fatigans* was proved to carry dengue in a recent epidemic in the Philippine Islands (Ashbourn and Craig).

Major Bennett, R.A.M.C., the officer in charge Brigade Laboratory, when he was here in the beginning of August, did some feeding experiments with the various kinds of mosquitoes obtainable, and intended to let them bite people in Darjeeling subsequently, but I understand that most of the insects died on their way to Darjeeling.

One also thought of the bug and flea as possible carriers, but the rapid spread of the disease

amongst better class Europeans seems to rule them out

CLINICAL SYMPTOMS

In a typical case of moderate severity—the patient reports sick with some fever—it may be 100° or 102°—a frontal headache, pain in the eyes and pain in the small of the back and thighs. He may or may not complain of pain in some joint or joints—in my experience most often not. Most frequently he will state that the illness came on quite suddenly, it may have been with a chill, or he may complain of having felt pains in his back or in some joint, etc., for a couple of days before onset.

On examination, one notices at once the suffused conjunctivæ and flushed cheeks. I saw one British officer who looked as though he had painted a huge red butterfly on his face, the colour was so brilliant. The pulse is full and bounding and probably in the nineties. The tongue is slightly furied. The examination otherwise proves negative.

If put to bed, kept on a low diet and given a diaphoretic mixture and aspirin for the pains, he feels much better in a couple of days, and his temperature is much lower or may have dropped to normal, though his tongue may be more markedly furied. The temperature rises again after a day or so with an exacerbation of all the symptoms, finally falling by crisis on the 6th or 7th day of his illness.

One officer developed the disease at Barrackpore, five days after leaving Calcutta. As Barrackpore was at that time free from this disease, it seems that in his case the incubation period could not have been less than five days. This was the only case which afforded any indication as to the length of the incubation period.

I append a rough analysis of the symptoms as we noticed them in the cases under report.

CIRCULATORY SYSTEM

(a) *The pulse* was full and bounding and though it did not shew in the Indian cases, that marked comparative slowness which Major Leonard Rogers, I.M.S., has described as so characteristic of "seven days' fever", yet, in most of the cases which I saw amongst officers, the pulse was remarkably slow. Amongst the sepoys pulse rates of over 100 were not common.

(b) *Flushing of the face and suffusion of the conjunctivæ* were marked in most cases, and in many cases there was an erythema apparent on the chest and abdomen, even through the dusky skin.

(c) *Rashes*—In 8 cases only were definite rashes noticed. In two of these the rash was scarlatiniform and was followed by fine desquamation. The others were ordinary roseolar rashes, most evident on the chest and belly, except in one case (a British officer) where the rash appeared on the forearms first and resembled the secondary rash of dengue, as described by Manson, except that it came out in the early

days of the disease and lasted right through. All the above rashes appeared early (1st or 2nd day) and faded slowly. No typical secondary rashes found in dengue were seen.

(d) *Leucopœnia*—This seemed to be the rule. In six cases in which the leucocytes were counted, the highest count was 9,300 per c m m and the lowest was 2,300 per c m m. The former was the only count over 6,000 and the average was 5,050 per c m m.

(e) *Epistaxis*—This occurred in a few cases only.

NERVOUS SYSTEM

(a) *Headache, backache and pain in the thighs*, excluding the pyrexia, were the symptoms most commonly complained of, and in a large number of cases there were no other symptoms, except anorexia and furied tongue. The headache was usually frontal and very severe, often associated with pain in the eyes—movements of the latter being painful.

(b) *Other Pains*—A very considerable number of the patients complained of pain "all over the body," "pain in all the bones of the body," "a burning sensation" or actual "pain" in the abdomen. One officer complained of his whole skin being very tender.

In many of the above cases, pains were so severe that the patients cried out at times. A few cases complained of pain in a joint or joints. In fact, two men were admitted by the Sub-Assistant Surgeon at Ballygunge as cases of rheumatic fever, because they complained so of the pain in their knees. However, cases with definite joint pains were in the minority, not more, I should say, than three or four per cent at the outside. I have described these pains under the heading of symptoms attributable to the nervous system, because they were not accompanied by any swelling, redness, etc.

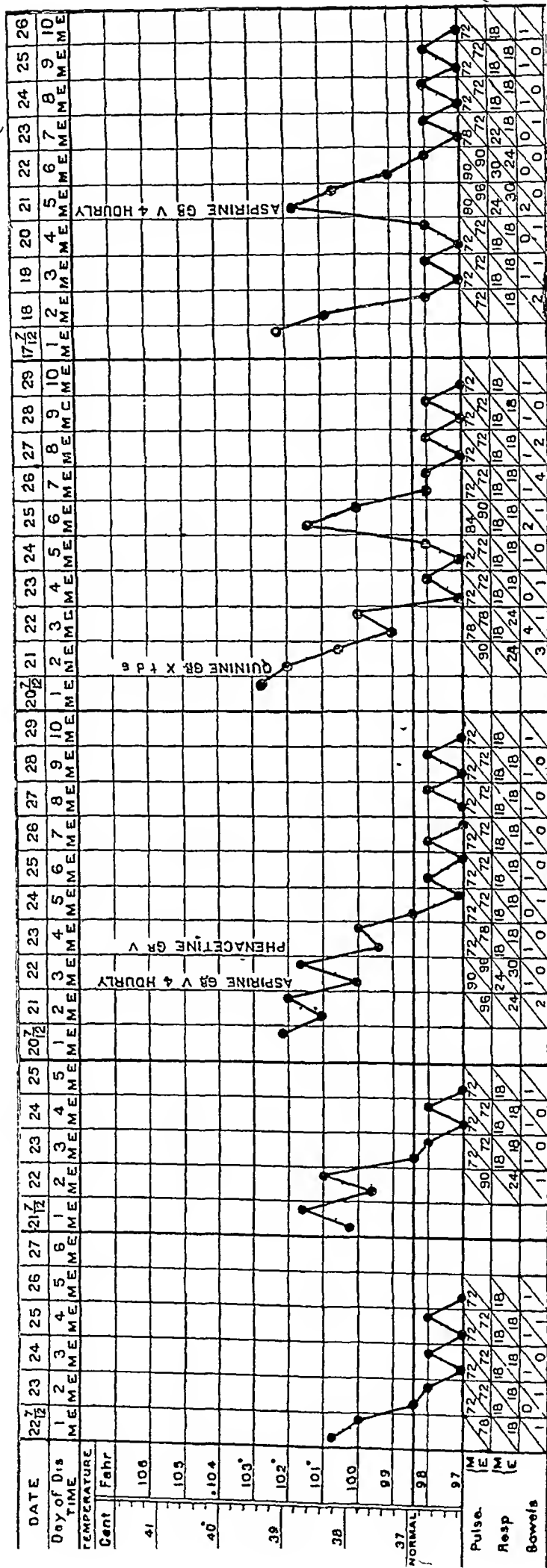
(c) *Pyrexia*—This varied considerably in degree and duration. The temperature curves fall naturally into three groups, as will be seen at once on glancing through the attached charts, 1 to 12.

Charts 1 to 3 are illustrative of the first type. This type closely resembles the "three days' fever" described by McCarrison and others, but, whereas I understand that a secondary rise never occurs in "three days' fever," it did in this fever, as a glance at chart 4 will show. Roughly half of the cases had charts of this type, but there is every probability that, had their temperatures been carefully taken four hourly for 6 or 7 days after it fell to normal, many of these would have shown a secondary rise as in chart 4.

Charts 4 to 8 shew a fever lasting some 6 or 7 days with a short intermission in the middle. Chart 7 shews a double intermission, but this was exceptional. This type of chart resembles the true dengue chart and formed about a third of the whole.

SOME NOTES ON AN EPIDEMIC OF DENGUE-FEVER AMONGST INDIAN TROOPS, CALCUTTA

BY CAPTAIN R S KENNEDY, HB, 1MB



Spleen not palpable	Spleen not palpable	Spleen not palpable	Spleen palpable	Pain in back and in	Headache	Pain in back Spleen not
Weakness	No ap	Headache	Bronchitis	both eyes	palpable	
pette		in back	the chest			

SOME NOTES ON AN EPIDEMIC OF DENGUE-FORM FEVER AMONGST INDIAN TROOPS, CALCUTTA

By Captain R S KENNEDY, M B, I M S

VI										VII										VIII										IX									
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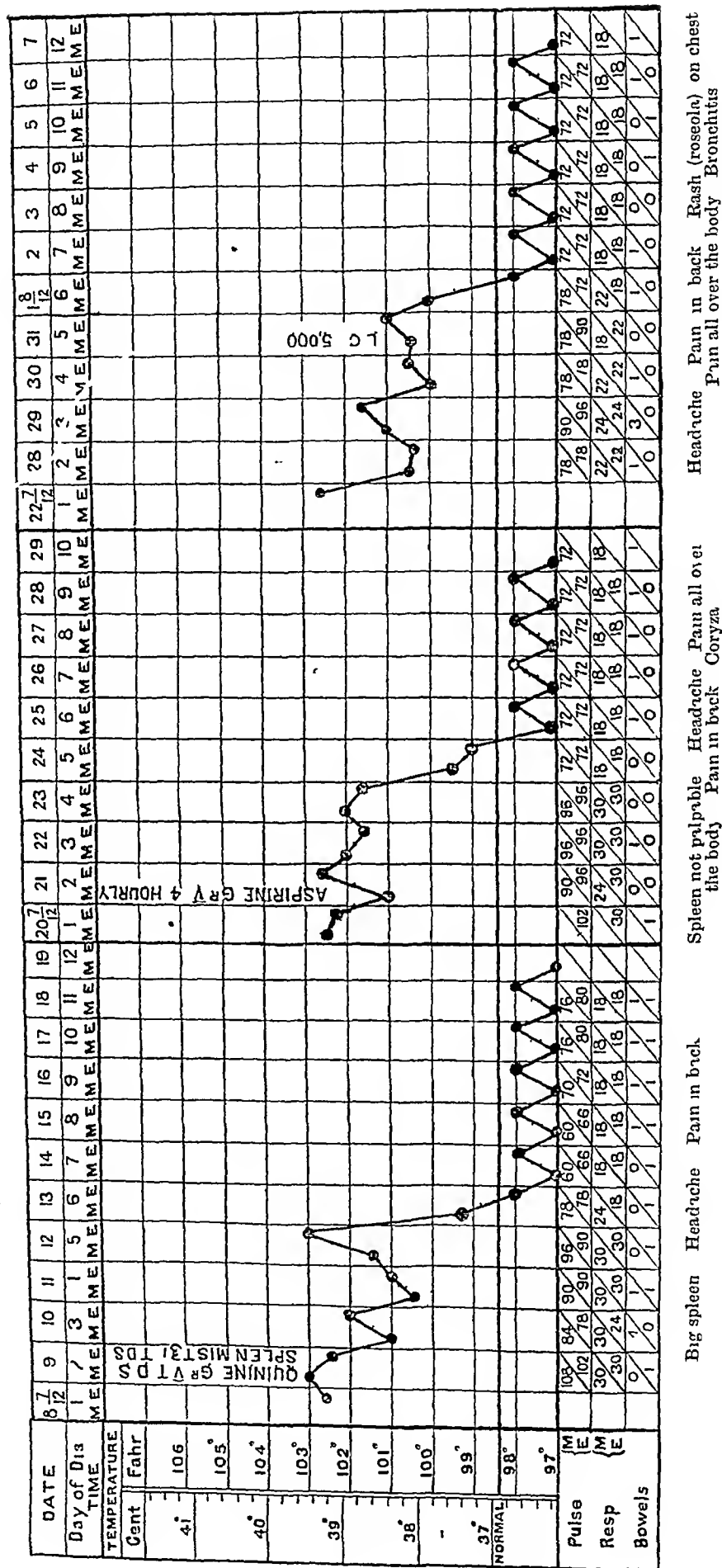
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SOME NOTES ON AN EPIDEMIC OF DENGUE-FORM FEVER AMONGST INDIAN
TROOPS, CALCUTTA

BY CAPTAIN R S KENNEDY, M B, I N S

XII

IX



The third type is the "saddle-back" type of "seven days' fever," and is exemplified by charts 9 to 12. This type formed about a sixth of the whole.

(d) *Mental Depression or Irritability*—These were met with so commonly and were so marked that I feel they should be included amongst the symptoms.

GASTRO-INTESTINAL SYMPTOMS

(a) *Tongue*—Though often fairly clean at the beginning, the tongue almost always developed a white fur, turning cream colour as the days passed. As a rule, it became clean at once when the temperature finally fell to normal.

(b) *Anorexia*—This was a very common though not a constant symptom.

(c) *Vomiting*—This occurred in a few of the cases, it was of a bilious type.

(d) *Abdominal Pain*—See under nervous symptoms.

RESPIRATORY SYMPTOMS

One or two cases complained of coryza in the beginning, whilst a few had bronchitis.

LYMPHATIC SYSTEM

One case had swelling of the lymphatic glands of both axillæ.

GENITO-URINARY SYSTEM

Nothing in particular was noted.

MUSCULAR SYSTEM

It should be noted that the pains described amongst nervous symptoms were, in the large bulk of cases, muscular.

CONVALESCENCE

In the large majority of cases convalescence was rapid, the men being fit to return to duty within a few days of the temperature dropping to normal. A few cases suffered from protracted loss of appetite or general debility for a time, and still fewer from "after pains" for a week or ten days, but the severe "after pains" of classical dengue were not met with.

COMPLICATIONS AND SEQUELÆ.

None of importance were met with. A few cases of boils and small abscesses occurred, as one might expect from the condition of leucopenia which occurred with this fever.

DIAGNOSIS

In order to arrive at a correct diagnosis one has to decide first whether one has been dealing with a single disease in this outbreak. I think the answer is in the affirmative because

(1) though the temperature curve varied considerably, yet the other symptoms did not vary correspondingly, nor did it at all follow that the man with the short course of pyrexia had less discomfort or a more rapid convalescence than others with more persistent fever, and (2) had one been dealing with more than one disease, one would have expected frequent re-admissions, but re-admissions were very rare, and the few there were, were probably relapses.

The next question is—was it dengue? I think it was, though it differed from the classical type of the disease as described by Sir P. Manson in the latest edition of his "Tropical Medicine," in the frequent absence of the secondary rise, in the less severe pains and rarity of "after pains" and in the non-occurrence of the secondary rash. (This rash, I understand, was observed by others elsewhere during the same epidemic.)

The third and last question which presents itself in this connection is—was this outbreak, which was only part of a general epidemic in Calcutta, the same as the "seven days' fever" described by Major Leonard Rogers, I.M.S.? The answer to this I leave to those better qualified to form an opinion, not having had any personal experience of "seven days' fever" in any other year, but the type of case exemplified by charts 9 to 12 appears to me to be very similar indeed to "seven days' fever." It would be interesting to hear the opinion of those experienced in Calcutta fevers, who have also dealt with this year's epidemic.

The differential diagnosis of the disease is easy if one excludes malaria by microscopical examination in doubtful cases. Of course, it might be confounded with any of the exanthemata or influenza or even rheumatic fever, but the combination of frontal headache, backache, pain in the thighs and fused tongue, together with the comparative rarity of any chest symptoms, etc., forms a fairly definite picture, when it appears in epidemic form. Sporadic cases would be extremely difficult to tell from certain cases of influenza.

PROGNOSIS

All the cases recovered and the vast majority of them regained their strength very quickly. One case, which may have had this fever originally, developed a nasty boil in the thigh near the exit scar of an old bullet wound. Septic pneumonia and pyæmia supervened and, despite prompt serum and vaccine treatment, he died. It is hard to say in this particular case whether the fever with which he first reported sick was this dengue form fever or whether it was due to the septic trouble already brewing, but it is conceivable that patients suffering from this disease with its marked leucopenia, would be especially liable to septic

processes and in this way the disease would form a certain risk to life

TREATMENT

Many of the cases reporting sick with this disease were found to have enlarged spleens, a legacy of old-standing malarial infection. From all these and from any other doubtful cases blood-smears were taken and sent for examination for malarial parasite, they were subsequently put on quinine grs 10, so as to be on the safe side. The quinine did not in any way shorten the fever, as will be seen in charts 4, 9, and 10.

Aspirin and phenacetin relieved the body pains and headache most effectively.

Liquor morphinæ in frequent small doses had to be given in one or two cases where the former failed, or to control vomiting. The routine treatment adopted was —

- (1) Initial purge
- (2) Rest in bed with light diet
- (3) Diaphoretic mixture and aspirin grs 5 every 4 hours, when pains were bad
- (4) Tonic mixture during convalescence

In conclusion, I should like to express my gratitude to Lieutenant E R Armstrong, IMS, and Sub-Assistant Surgeons Aigam Das Gossain and G J Ferris for their very valuable assistance in compiling these notes.

Statement shewing average strength and number of cases of Dengue from 16th June to 20th September 1912 amongst Indian units of Calcutta

STATEMENT "C"

PLACE	40TH PATHANS (Arrived at Calcutta from D I Khan on 3 2 12)		75TH CARNATIC INF (Arrived at Calcutta from Trichinopoly on 1 2 12)		36TH JACOB'S HORSE (Arrived at Calcutta from Cawnpur on 16 1 12)		TOTAL NUMBER OF ADMISSIONS
	Average Strength	Number of Admissions	Average Strength	Number of Admissions	Average Strength	Number of Admissions	
Fort William							39
Alipore		264		39		6	270
Ballygunge						10	10
TOTAL ADMISSIONS		264		39		16	319

¹ First case admitted 29th June 1912

² First case admitted 27th June 1912

³ First case admitted 6th July 1912

⁴ First case admitted 6th July 1912

PROSTATECTOMY

BY C M THOMPSON, M.L., B.Ch., T.C.D.,

LT COL., I.M.S. (Retd.)

Medical Officer, H. H. The Nizam's State Railway,
Secunderabad

Cases of removal of the prostate are sufficiently uncommon in India to justify the publication of the following case. While I was Senior Medical Officer of the General Hospital, Madras, I cannot recall to mind a single case in which the operation of prostatectomy was performed, and as far as I am aware there has only been one case in the Afzul Gung Hospital, Hyderabad, and that was done by myself several years ago, on one of the numerous occasions when I acted as Residency Surgeon Hyderabad. My experience is that there are numerous cases of enlarged prostate amongst Mohammedans, suitable for operation and that the operation is only required to be known amongst them to be eagerly sought for.

Syed Oosman a retired Sepoy aged 60 years, has had for the last six years gradually increasing difficulty in passing water and for the last year has had to come frequently to hospital to have a catheter passed. On the 28th May last he was admitted for total inability to pass a drop of urine, on examination, the prostate was found to be enlarged and very hard. He was kept lying down for a few days, urine was quite clear, no albumen, specific gravity 1020. The bladder was washed out with boric lotion, its capacity was found to be greatly diminished, only six ounces could be introduced when the distended organ could be felt above the pubis very little larger than a cricket ball. The operation was performed on the morning of the 1st June. Peritoneal fold extended all over the anterior surface of the bladder and had to be hooked up. The bladder wall was much thickened, at least a quarter of an inch thick. There was the usual difficulty in scooping out the prostate but eventually it was completely removed and weighed one ounce. An examination shows the entire lobe to be enlarged, the right lobe also enlarged and a nodular excrescence extended towards the left completely occluding the entrance into the bladder. There was a peculiar villus like projection from the left lobe which is well seen in the photograph. For the first few days the pulse kept fast and he was troubled with hiccough, but otherwise his condition was quite satisfactory.

The tube was removed from the bladder on the 11th day and now the wound has completely healed and he is passing urine in a full stream. He says he knows several others afflicted as he was, and intends to send them for operation.

Indian Medical Gazette

NOVEMBER

INFANTILE BERI-BERI

We make no apology for returning to a consideration of one of the so-called tropical diseases—beri-beri. Beri-beri is, as is well known, world-wide in its distribution, although tropical countries have been more extensively ravaged by it. It has always been regarded as a disease of adults and adolescents and not until within the last decade and a half has attention been called to a possible manifestation of the malady in earlier life.

We need not refer in detail to the various steps in the gradual recognition of an infantile form, the whole subject will be found admirably discussed in an article by Andrews in the April issue of *The Philippine Journal of Science*, suffice it to say, that Clark of Hong-Kong described an outbreak in the Berlin Foundling Home in 1900. Hirota first described the condition in infants, but it is only recently in Japan and the Philippines that infantile beri-beri, as an entity, has been recognized and studied.

Because of the high death-rate among infants in the Philippines, the subject of infant mortality has always been one of great interest. Various views had been put forward to account for the high death rate—some believed it due to convulsions and eclampsia, some attributed it to a nervous breakdown due to gastralgia and intestinal colic. Guerreiro in 1904, on clinical grounds, arrived at the conclusion that the disease largely responsible for the high mortality in infants was infantile beri-beri.

Four years later, Jose Albert described the clinical and pathological findings in a case of this disease, amply confirming the clinical observations. In 1909 McLaughlin and Andrews carried out an investigation into the cause of death from the pathological findings at the necropsy of 219 infants under one year of age, the results were startling as the evidence showed that 56.6 per cent died from infantile beri-beri.

Later workers, from clinical and pathological observations, concluded that death was largely due to infantile beri-beri and that this disease was caused by a toxin in the mother's milk.

Andrews, in the paper already referred to, has made a complete study of the whole subject and

gives some most important and highly interesting information on the condition. He bases his conclusion on facts arrived at from—a clinical study of the infant and mother, analyses of the milk of mothers whose infants have died of the disease, histological studies of the tissues of infants dead of the disease, and a study of the etiology of the condition.

Infants suffering from beri-beri are nearly always plump and well nourished. The face is full, sometimes presenting a swollen appearance. Edema of the lower extremities is seen. Nineteenth of the deaths occur between the ages of one and three months. There is usually some cyanosis, slight dyspnoea, periodic restlessness, insomnia, vomiting, and possibly a change in the child's voice, aphonia and oliguria appear, as a rule, late. The pulse is rapid, ranging from 130 to 170, or more, per minute. There is an increase in the area of præcordial dullness. Attacks of dyspnoea are common in one of which death often occurs. Usually there is no fever in uncomplicated cases.

In nearly all cases the mother shows some symptoms of beri-beri, numbness and pains in the legs, anæsthetic areas, formication, tachycardia, dyspnoea, inco-ordination, loss of knee-jerks and dilated heart. Children of such mothers die off one after another if breast-fed; if fed artificially they escape beri-beri.

The analyses of the milk of women with beri-beri is of interest as it shows the amount of calcium oxide and phosphorus pentoxide very greatly increased—thus confirming the results of recent investigations that Schaumann's theory of a deficiency of phosphorus as the cause of beri-beri is not correct.

Andrews, not content with proving by necropsy and microscopical findings, that the disease is beri-beri, and by demonstrating that a change from the breast to artificial food causes improvement in infants suffering from the disease, thus making evident that the mother's milk bears some causal relation to the condition, goes a step further and shows that the real cause is something lacking in the milk and not any harmful constituent. He was able to arrange for the nursing of young puppies by mothers whose infants had died of beri-beri.

Shortly these puppies (16 in number) showed the typical signs of the disease and those nursed until death took place exhibited the typical findings of beri-beri.

The whole paper is a record of an admirable piece of work, and the author is to be heartily congratulated on his success in forging another link in the chain of evidence which goes to prove beriberi a nutritional disease, or, as Funk puts it, a deficiency disease. The further evidence is not wanting that those mothers who are themselves suffering from beriberi, or whose infants are dying off in large numbers from an infantile form, have been living on a diet largely composed of white rice, and that where white rice is not available, or where other cereals are freely partaken of, neither the adult nor infantile form of the malady is met with. As a crucial point of evidence we have the information that through treatment of the mother specially by an elimination of white rice from her diet and substitution of those food-stuffs containing the all-important vitamins, beriberi in both mother and suckling can be cured. The author puts forward a strong plea for Government intervention in enforcing the sale of those forms of rice known to be free from all danger of producing beriberi.

THE ACIDOSIS INDEX

THE condition of "acidosis" due to the production in the organism of the acetone bodies in abnormal quantities is of more than ordinary interest to the profession in India. As is well known it is met with in a large number of conditions, among which may be mentioned starvation, the sudden withdrawal of all carbohydrate food, certain digestive disturbances, such as cyclic vomiting, etc., some febrile diseases, after anaesthesia, and notably in diabetes mellitus in its advanced stages. Acetone occurs normally in the urine and breath in traces, but diacetic acid and β -oxybutyric acid are found only in pathological conditions and are excreted only by the kidneys. In the terminal stages of diabetes mellitus the excretion of the acetone bodies (acetone diacetic, and β -oxybutyric acid) reckoned as β -oxybutyric acid may exceed 150 grammes in the twenty-four hours. The source of these acetone bodies is, in all probability, the imperfect oxidation of the fat of the food or the fat of the body.

As pointed out by T. Stuart Hart, in the *Quarterly Journal of Medicine*, the harmful effects of the excessive production of the acetone bodies are two-fold. First the failure to oxidize

these substances may mean a large loss of energy to the body, each gramme of β -oxybutyric acid represents a loss of 4.4 calories to the organism. Second these organic acids have a direct toxic effect on the tissues, then cumulative effect is believed by many to be the direct cause of coma as seen in diabetes.

The energy lost to the body when a patient is excreting large quantities of the acetone bodies may equal, or even exceed, that lost by the sugar eliminated—a knowledge therefore of the quantity of the acetone body output in severe diabetes is quite as important as a knowledge of the amount of sugar excreted. In the careful study of diabetes the quantitative estimations of the excretion of the acetone bodies are indispensable.

Several laboratory methods are in use to estimate the degree of acidosis, but their complexity and expense place them beyond the reach of the average clinician. Hart has, therefore, worked out a few simple tests which will be found to afford valuable information in watching the rise and fall of the "acidosis." He proposes to employ the term "acidosis index" with definite numerical values to denote the varying degrees of acidosis.

The estimation of the "acidosis index" depends on the fact that in developing acid intoxication, acetone is first found, as this increases in amount, diacetic acid makes its appearance, and when diacetic acid is being excreted in any considerable amount, β -oxybutyric acid will also be found in the urine.

By an application of certain well-known simple tests for acetone and diacetic acid, Hart shows that the degree of acidosis can be arrived at.

The following is the method he employs—

1. **Lunge's Test.** In a test-tube containing 5 c.c. of the urine under investigation, dissolve a few small crystals of sodium nitroprussiate and 1 c.c. of glacial acetic acid, overlay this mixture with 3 c.c. of strong ammonium hydroxide. In the presence of acetone a purple ring will develop at the point of contact between the ammonia and the underlying mixture.

2. **Gerhardt's Test.** This is the ordinary test for diacetic acid, viz., the development of a Burgundy red colour on the addition of a solution of ferric chloride.

In order to determine the "acidosis index" the following solutions are necessary —

- (a) The "standard solution," consisting of ethyl aceto-acetate 1 c c, alcohol 25 c c, distilled water to 100 c c
- (b) Ferric chloride solution, consisting of 100 grammes of ferric chloride dissolved in 100 c c of distilled water

Take two test-tubes of equal calibre, put in one 10 c c of the "standard solution," and in the other 10 c c of the urine to be tested. Add to each 1 c c of the ferric chloride solution. Allow the tubes to stand a couple of minutes to permit the colour to develop fully, then compare the colour of the two test-tubes when they are held between the sky and the eye. If the tube containing the "standard solution" is of a lighter shade than the urine mixture, dilute the latter with distilled water until the colours match, noting the volume to which it is necessary to dilute the urine mixture.

By the use of these reactions we obtain a numerical value for the "acidosis index per litre" in accordance with the following schedule —

		Acidosis Index per Litre
Lange's test positive	}	0.5
Gerhardt's test negative		
Gerhardt's test positive vol		
ume of urine solution	..	10 c c 1.0
		15 c c 1.5
		20 c c 2.0
		100 c c 10.0

Intermediate volumes have a proportional value. In order to obtain the "acidosis index" proper the index per litre must be multiplied by the number of litres of urine passed in 24 hours.

The value thus obtained approximately corresponds to the total acidosis estimated in terms of β -oxybutyric acid by the more exact chemical methods, i.e., an "acidosis index" of 10 corresponds to a total acidosis of 10 grammes of β -oxybutyric acid.

This method is not reliable if the patient is taking salicylic acid or any of its compounds.

NEW REGULATIONS FOR THE BACTERIOLOGICAL DEPARTMENT

Owing to its smallness the Bacteriological Department suffers from stagnation, in so far as the occurrence of permanent vacancies is concerned. To remedy this it has been decided to give officers officiating in the department a minimum

rate of staff pay on the analogy of the system obtaining in the Jail Department. Lieutenants and Captains under 5 years' service draw grade pay *plus* Rs 300 staff pay, and Captains over 5 years Rs 350 staff pay, when confirmed in the Department. An officiating officer has hitherto drawn half this staff pay *plus* half his regimental staff, if he has a permanent regimental appointment, but when he has not such an appointment he has been restricted to half the bacteriological staff pay.

It has now been decided that officers without a permanent regimental appointment officiating in the Bacteriological Department shall receive a minimum staff pay of Rs 225 and Rs 250 according as they are under or over 5 years' service.

Another concession is the grant of Presidency house-rent to bacteriological officers in Madras, and admission to the benefits of the house allowance schemes in Calcutta and Bombay.

Finally, whereas hitherto the Government share of fees earned for private bacteriological work in a Government Laboratory has been 50 per cent, it has now been decided that officers may retain 96 per cent of the fees so earned.

Current Topics.

SPONTANEOUS DISAPPEARANCE OF CANCER

In the last report of the Imperial Research Institute the Director says —

The spontaneous recession of transplanted tumours was first observed in the mouse, and it is now well known that it occurs in the rat, during the past year it has also been frequently observed in the case of a tumour of the rabbit, which is being propagated in this laboratory. There can, therefore, be no doubt that it is a phenomenon of wide biological significance. Recession takes place in spontaneous tumours, however, with much greater rarity, and observations extending throughout the past eight years have shown that in the mouse, among tumours whose malignancy has been demonstrated both clinically and microscopically, it occurs in scarcely 1 per cent. Resemblances can be recognised when the appearances seen during the process in spontaneous tumours are compared with those in propagable growths, and in both instances they suggest that its course is due to a disturbance in the relationship between epithelium and connective tissue, in the course of which the cancer cell, losing its aggressive character, is overpowered by the connective tissue.

The study of healing in spontaneous and in transplanted tumours show that the cure for cancer must be sought by obtaining a fuller knowledge of those properties of the malignant cell which render susceptible to inimical influences and not merely by striving to induce these influences in its environment.

The number of spontaneous cures occurring in a transplanted strain is determined by several factors of which some are resident in the tumour cells themselves. One

of them is a change taking place in the cells themselves whereby they become more vulnerable to connective tissue invasion and overgrowth which put an end to their existence. This change, or its equivalent, cannot yet be induced experimentally, but so far as the process of healing has been followed, *e.g.*, after the use of radium or adrenalin, no difference has been detected between it and spontaneous cure. In the case of transplanted tumours, the ultimate result is merely an enhanced frequency of auto immunisation due to the absorption of the tumours in the treated as compared with the control animals. Interference with continuous growth has been obtained only inconstantly and in very moderate degree for tumours naturally exhibiting a tendency to spontaneous healing, and not at all as yet for those reproducing more faithfully the features of natural cancer in their powers of progressive growth and their tendency to produce metastases in the animals inoculated. The differences between the tumour strains at either extreme are, however, differences in degree only, not in kind.

THE PASTEUR INSTITUTE OF SOUTHERN INDIA

THE report of the Director shows a marked increase in the number of patients treated during the year, 940 as against 827 for the previous year. The total number of deaths from hydrophobia was 8 or 0.85 per cent. In addition to those treated, 128 persons sought advice but were not considered to have run any risk of infection. Amongst the interesting material furnished in the report, the Director makes the following remarks—

I should like to draw attention to the practice which seems to be very common of destroying a dog directly it has bitten anyone, whether it shows symptoms of illness or not. Every dog that bites a person is not necessarily suffering from rabies. This practice leads to considerable difficulty in many cases in deciding as to the necessity of treatment, as, if a dog is destroyed in a very early stage of the disease, the laboratory tests are rendered more difficult. If a dog shows no definite symptoms, the best thing is to tie it up securely for ten days, if it has rabies, symptoms will develop probably in a much shorter time. If it remains well at the end of that time, treatment is unnecessary.

Whenever possible the brain should be sent here for confirmation of the diagnosis.

In May 1911, a conference of Medical officers, which Major Cornwall attended, was held at Simla to consider the subject of the treatment of rabies in India. Among other subjects brought before them was the possibility of using brain substance that had been killed by heat or by chemicals, in place of fresh material which had hitherto been used.

Some experiments performed by Sir David Semple at Kasauli and published in No. 44 of the Scientific Memoirs by officers of the Medical and Sanitary Departments of the Government of India held out hopes of success in this direction.

Very extended experiments were performed during the year at Kasauli the Parel Laboratory in Bombay and at Coonoor, and as a result it has been shown that in this method we have a more efficacious rabies vaccine and it has been brought into use in the Indian Pasteur Institutes in place of the dilution method of Hoyer.

The method consists in killing the fixed virus brain obtained in the usual way from passage rabbits with 1 per cent carbolic acid. This is incubated at 37° C for twenty-four hours, and then diluted with equal parts of normal saline, so that the vaccine inoculated into the patients contains 5 per cent carbolic acid.

A great advantage of the method is that the vaccine can be kept for some time without danger of contamination

or deterioration, and so will prove more economical in the number of rabbits required.

This treatment was commenced here on 30th January 1912, and the change was announced by the President at a Committee meeting of the Association held in Madras on 14th March 1912 and was likewise published in the Madras newspapers.

During the period under report the work done included experiments on treatment by crystallised vaccine and other researches on rabies and immunity. Bulletin No. 3 was published during the year.

KALA AZAR IN ASSAM

THE Chief Commissioner of Assam has issued an important resolution on the above subject. The disease has abated in violence during recent years, but one of the main problems, with which the Sanitary Department has to grapple is the presence throughout the province of scattered endemic foci of kala-azar.

After tracing the history of the Assam epidemic from its beginnings in the Garo Hills in 1869, until its recent decline in the several areas first affected, the resolution goes on to point out that in the Surma Valley different conditions prevail. Here the disease has been endemic and the death rate low, and the probable explanation of the greater havoc worked by the disease in the Assam Valley is that its virgin soil was previously unaffected by the sporadic form of the disease, and that it there found a population fully susceptible to its deadly influence.

Recent investigations have demonstrated that in the districts of Golaghat, Kamrup, Sylhet and Gualpara kala-azar is present and shows its characteristic tendency to groups of houses and families. It, however, at present displays no tendency to assume epidemic proportions.

The situation, though not fraught with immediate danger, is one that calls for vigilance, and the Chief Commissioner agrees with the medical authorities that advantage should be taken of the present period of quiescence to take measures to prevent the recrudescence of the disease and its spread to the Upper districts of the Assam Valley.

With this end in view Colonel Campbell, I.M.S., recommends the appointment of a special staff of Assistant and Sub-Assistant Surgeons, who will make a survey of the districts affected and locate the centres of infection which will then be kept under observation. A staff of 14 Sub-Assistant Surgeons with two Assistant Surgeons to supervise the work has accordingly been appointed for one year. Medical officers in different districts are to be on the watch for any signs of the appearance of the disease and to report any such to the medical department.

TUBERCULIN TREATMENT IN BOMBAY

DR. N. F. SURVEYOR gives an account of his experiences on the treatment of tuberculosis by the above method in *The Bombay Medical*

and Physical Society His report is briefly as follows —

Tuberculin injections were tried in altogether 146 cases, the doses were varying from $\frac{1}{10000}$ to $\frac{1}{1000}$ of a mgm.

As a rule no injection of tuberculin was given if the temperature was higher than 99°F. The febrile crises were first treated with streptococcal and staphylococcal vaccines, and thus such patients were prepared for tuberculin injections by bringing down the temperature. Many of the cases in the table are grouped under the heading of "not fully treated." However, in such of the cases as had persisted in having the injections on the whole very encouraging results were noticed. This was specially so in case of early phthisis. Many of these were not in a condition, pecuniary or otherwise, to go to hill-stations, and had to carry on their usual occupation. But still in these cases amelioration of symptoms, and gain in weight were noticed with loss of tubercle bacilli from the sputum. One case deserves special mention. He had hæmoptysis and tubercle bacilli in the sputum. The weight which to start with was 119 lbs had fallen to 117 lbs before treatment with tuberculin could be started and after that he kept on increasing steadily, and in four months tubercle bacilli had disappeared from the sputum and the weight had gone up to 145 lbs which after 6 months more was 156 lbs. An interesting point in connection with this case was the way in which the patient probably got the infection. This patient was staying at a healthy locality with a friend, who brings his brother to stay with him. The third party was in the third stage of phthisis. Three months later both the previously healthy persons got hæmoptysis, the patient mentioned above showing tubercle bacilli in the sputum which, however, were not detected in the other one, but he gave a positive ophthalmic reaction and had hæmoptysis with cough, fever and loss of weight. This case is of further interest as here the nature of his occupation required him to stay at a healthy place where he caught the infection. Now he could not give up his work so he used to come up for treatment to Bombay. Before the injections were given he was constantly losing weight, but commenced to improve soon after the starting of the injections. His companion who could not take the injections for about two months kept on losing weight although living under identical conditions. Ultimately he came down for the injections and has been putting on weight steadily since then. Another case of a schoolboy with phthisis was found to have physical signs at both apices and hæmoptysis. He was much benefited after the injections, disappearance of tubercle bacilli from the sputum and improvement in the clinical signs and symptoms were noticed. Seeing this marked benefit, he gave up the treatment, hæmoptysis re-started, tubercle bacilli reappeared, both of these again disappearing on resuming the tuberculin injections. He is in very poor circumstances and had no chance of living in a healthy locality.

I must insist again on the smallness of dose, and a constant careful examination of patient receiving the injections. I have always avoided any sort of reaction after the injections by never exceeding the dose mentioned. It is interesting to note that recently extremely minute doses $\frac{1}{10000}$ to $\frac{1}{1000}$ mgms by mouth and injection have been recommended in febrile phthisis cases and it is worth giving a trial.

An attempt was made to see if leucocytic variation can give help in determination of dose and time in vaccine treatment. In septic cases one advantage noticed was the fall in the total number of the white blood cells and return to the normal leucocytic ratio instead of the marked increase of the polymorphous clear cells. These points are a help in determining the dose, etc., for the treatment. Thus, if the leucocytic ratio is approaching the normal and eosinophilic cells are also found after vaccine injection, although the

fever may not have completely subsided and the other symptoms may not have been much changed for the better, one can safely proceed with the injections with permanent benefit. This was observed to be the case in the two acute cases of streptococcal infection mentioned above. The gradual fall in the leucocytosis further shows that the patient is on the way to recovery. Another point noticed was the increase in the eosinophilic percentage. This is noticed both in vaccine and tuberculin cases and seems to be an index of the progress to cure. It has been stated that the presence of eosinophiles in the blood in tuberculin cases is a favourable condition, and the same rise in the eosinophilic contents in enteric cases is noticed during the convalescent stage.

In conclusion, I may state that from my observations I am inclined to consider tuberculin treatment of great value to medical science.

The following notes are culled from the Report of the Health Officer of Calcutta for 1911, which is a most interesting pamphlet and one that reflects the greatest credit on its author.

EPIDEMIC DROPSY

(Ben-Ben)

There were only 20 deaths reported as due to Ben-Ben during the year. No fresh cases came to my notice, and these deaths were apparently all due to the long standing sequelæ of this disease. There are some who still hold to the extraordinary theory that this epidemic disease is brought about by an imperfect dietary—a dietary in which rice forms the principal part and in which the rice has been deprived of valuable constituents by polishing. Attempt is even made to show that the disease occurs in times of a high and sustained rise in the price of food grains. In reply it is sufficient to say that the character of the food of the people has remained the same for generations and that rice, the principal constituent, has continued to be prepared in the same way. If the disease were due to the polished rice and to a deficiency of certain parts of rice, then the poor would certainly be the sufferers and the poorer the set of people were the more likely would they be to suffer. This has certainly not been shown to be the case. Moreover, the poor are always with us and the disease should on this theory be endemic in the city. This also is not the case. The theory ignores the fact that the disease affects all classes and the rich or well to do as well as the poor, that it has occurred in outbreaks and that deficiency of a particular constituent in any one food is made up for in other foods. It is quite unnecessary to discuss this further.

DYSENTERY AND DIARRHŒA

These diseases caused 1,938 deaths as compared with 1,807 last year and 1,780 in 1909. Formerly, however, the mortality was much greater. It is to be noted that the Old Town suffers much less than the Suburbs. The death rate for the whole City was 21 per 1,000, but Urban Calcutta had a rate of only 15 per 1,000 as compared with 38 per 1,000 for the Suburbs. All the wards in Suburban Calcutta have a high death rate. The Fringe Area but little.

These diseases cause more deaths in the wet and cooler parts of the year—the mortality declining in the hottest months. Females suffer to a very much greater extent than males.

Of the total deaths (1,938) no less than 294 occurred amongst infants.

Of the total deaths 1,938, dysentery caused 1,601 and diarrhœa 337 deaths. In addition, however, there were 323 deaths reported as due to enteritis. Hindus suffer to a greater extent than Mahomedans.

CHOLERA

There were 1,860 deaths from Cholera during the year. This is the smallest mortality recorded for the

past 10 years. The Cholera death rate for the City was 2 per 1,000 of the population as against the quinquennial average of 3 per 1,000. The death rate for Urban Calcutta was only 1.8 per 1,000 as compared with 2.7 for the Suburbs. District IV had the highest mortality and District III the lowest. Individual wards show great variations. Ward 22 had the highest rate (3.6 per 1,000) with Ward 2 almost as bad (3.2 per 1,000). Other wards with rates above the average of the City were Ward 5 with a rate of 2.8 per 1,000, Ward 21 a ratio of 2.4 per 1,000, Ward 23, 2.6 per 1,000, Ward 25, 2.3 per 1,000. The Canal had a rate of 3.3 per 1,000.

It will again be noticed, as I have pointed out in previous reports, that the wards bordering on the River and on Folly's Nullah suffer most from cholera. While this disease is prevalent all the year round, there are usually epidemic periods in March, April and May. It is during the monsoon that fewest cases occur. Cholera is much more prevalent among Hindus (1,621 deaths) than amongst Mahomedans (217 deaths). Amongst non Asiatics 11 deaths occurred. Every now and then small outbreaks occur in bustees and almost invariably round or near to a tank. Prompt measures succeed in checking the spread. Males and females are equally attacked.

MALARIAL PROPHYLAXIS IN BENGAL

MAJOR FRY, Special Deputy Sanitary Commissioner, was at work in the districts of Jessore, Cuttack, Puri, Bhagalpur, Muzaffarpur, Champaran, Patna, Gaya, Shahabad, Hazaribagh, Ranchi, Manbhum and elsewhere, and the result of his investigations leads to the conclusion that little permanent benefit is likely to accrue in Bengal by any attempt to eradicate mosquitoes by destroying larvæ. Until fuller information as to the causes underlying the prevalence of malaria, in what is called the hyper endemic area, which consists of part of Murshidabad and Jessore, is obtained, the only method of procedure which seems to hold out hopes of success is to reduce the infection rate by the use of quinine.

Twenty four Sub Assistant Surgeons were deputed for distributing quinine gratuitously. In Jessore, quinine hydrochloride in "treatments" was exclusively used and is said to have been very efficacious and much appreciated by the people. The sale of quinine was the largest in the districts of Burdwan, Khulna, Nadia, Murshidabad and Birbhum.

ROYAL INSTITUTE OF PUBLIC HEALTH, BERLIN CONGRESS, JULY 24TH—JULY 29TH, 1912

We are indebted to Major W G Hamilton, I M S, for the following account of an interesting proceeding—

The recent Congress, held by the Royal Institute of Public Health in Berlin, proved a great success, and every one of the 230 English members who took part in the Congress will always look back with pleasure at the days spent in the capital of the German Empire. The Congress was formally opened by the President, the Rt Hon Earl Beauchamp in the large assembly hall of the Herrenhaus (Prussian House of Lords) on the morning of the 24th July. Representatives of the University, the various learned societies, the municipality and heads of the Medical Departments of the German Army and Navy were present to offer a welcome to Berlin.

After the opening ceremony the Congress split up into its various sections where the papers were read and discussions took place.

There were five sections, State Medicine, Bacteriology, Child Study and Hygiene, Naval, Military and Tropical Medicine, and lastly, Municipal Engineering, Architecture and Town Planning.

In the Military and Tropical Medicine section, there were a fair number of service men both on the active and retired lists of the Royal Navy, R A M C, and I M S, including the President of the section, Sir Roland Ross, Fleet Surgeon Bassett Smith, C B, R N, and the veteran Surgeon-General, Sir Robert Jackson, K C B, late A M S.

Papers by Colonel W G King, C I E, Dr Foy, the Port Health Officer, Rangoon, Major Ross, I M S, and Dr Hossack, the Port Health Officer of Calcutta, were read and discussed in this section, there were also some valuable papers on Tropical Medicine read by German members of the Congress. Besides the reading of papers excursions were made every afternoon to the various hospitals and scientific institutes of Berlin, and members were shown over these places by the officials in charge.

The social part of the Congress was organised by the German Committee and the arrangements were perfect. The Burgomeister of Berlin entertained the members to a large banquet at the Rathaus when nearly 500 people sat down and spent a most enjoyable evening, memorable speeches were delivered by Lord Beauchamp and the Burgomeister. There was another large dinner held at the Zoological Garden after the conclusion of the Congress, and on the Sunday following the English members were entertained by the German Committee to a luncheon at a hotel overlooking the Lake Wannsee, and in the afternoon the whole Congress proceeded by steamer to Potsdam accompanied by four crews of the Berlin Rowing Club. At Potsdam the Congress was welcomed by the Burgomeister and the party was driven to the various places, parks and churches, finally, the Congress took tea and returned to Berlin by train.

The ladies of the Congress were specially provided for by a Committee of Berlin ladies and were taken to all the sights of Berlin and Charlottenberg whilst the male members were at work in their sections.

UNIVERSITY OF CAMBRIDGE DIPLOMA IN TROPICAL MEDICINE AND HYGIENE

The following officers of the Indian Medical Service, having satisfied the Examiners, are entitled to receive the Diploma—

Capt Gerard Irvine Davys, Capt Charles Aikman Goulay, Major William Lapsley, Capt Patrick Manson Renne, and Capt Harry Emslie Smith.

ENHANCED RATES OF PAY FOR MILITARY SUB ASSISTANT SURGEONS

WITH the approval of the Most Hon'ble the Secretary of State for India, the Government of India sanction, with effect from the 13th May 1912, the following enhanced rates of pay for the Military Sub-Assistant Surgeons of the Indian Subordinate Medical Department —

	Per men sem Rs
Sub Assistant Surgeon, 3rd Grade, from 1 to 5 years' service	35
Sub Assistant Surgeon, 2nd Grade, from 6 to 10 years' service	50
Sub Assistant Surgeon, 1st Grade	70
Senior Sub Assistant Surgeon, 2nd Class, ranking as Jemadar	90
Senior Sub Assistant Surgeon, 1st Class, ranking as Subadar	110

The above rates are inclusive of the extra pay for English qualification

Reviews

A Practical Essay on Lobar Pneumonia — By C BEHARI LALL DINA Second Edition, Revised and Enlarged Indian Press, Allahabad Price, 8/ 1912

THIS little work is the revised essay of the author which gained for him first place in competition in 1907. He publishes it now in book form in compliance with the request of a number of his friends and professional brethren. It is a short account of the main facts known with regard to lobar pneumonia and gives a considerable amount of information on the subject—such as will be found in the ordinary text-books of medicine.

Infant Feeding — By CLIFFORD G. GRULES, A.M., M.D. Illustrated Messrs W B Saunders Co, 1912

THIS new volume on Infant Feeding is based on a course of lectures given to the students of Rush Medical College, and it is partly due to a demand on their part that the treatise is written. In its preparation the writer has endeavoured to bring our knowledge of the scientific processes that underlie infant feeding up to the present, and to apply these principles in such a way that they can be grasped by one no more familiar with the subject than the practising physician.

The author states that he shares and has largely followed the opinions of continental authorities which are to some extent at variance with those held by American writers on the subject.

The volume is divided into four parts which deal respectively with the fundamental principles of infants' nutrition, the nourishment of the infant on the breast, artificial feeding, and the nutrition in other conditions.

We have read this book with very great pleasure and with very considerable profit. Its

importance, particularly in India, could hardly be exaggerated when one bears in mind that about one-fourth of all deaths occur in the first year of life and that of these 60 per cent are due to gastro-intestinal disturbances, when this is realized it will be readily acknowledged that the scientific advancements made in the feeding of infants, since the publication of Czerny and Keller's work in 1905, occupy a very important place in the fight of the profession against death, as there is little doubt the great majority of these infants could be saved if gastro-intestinal complications could be avoided. The successful combating of infant mortality can only be brought about by the education of the mothers in the essential facts of the science of nourishment of the infant. The author deals with the subject from a commonsense point of view, and has succeeded in giving to the profession a most valuable and interesting account of the scientific feeding of the infant. The value of the book is enhanced by photographs and many figures.

The Extra Pharmacopœia of Martindale and Westcott, Revised. In two volumes. Fifteenth Edition. H K Lewis, 136, Gower Street, W C, 1912. 14/ and 7/.

THE authors in this new edition of this well-known work have made a new departure. The subject-matter has grown so great that they have found it necessary to divide the work into two volumes.

Volume I contains a description of the chemical and therapeutic properties of those Extra Pharmacopœial Chemicals and Drugs which have attracted particular attention in the medical and scientific world. It also contains an enlarged chapter on vaccine therapy which will be found of absorbing interest. Organotherapy and sterilization as applied to Pharmacy are discussed, and some pages are devoted to the legal aspect of Poisons and the Pharmacy Act.

Volume II embodies analytical and experimental work. It contains also résumés of investigations by eminent authorities which recently tended to elucidate the causation of many types of disease, *e.g.*, beri-beri, cancer, diphtheria, leprosy, syphilis, etc.

It is unnecessary for us to do more than call the attention of the profession in India to this new edition. The work is too well known to require more from our hands. It is a book that is to be found in the library of almost every practising physician and well merits its popularity. We need only say that the new edition will be found to show many improvements and afford much new information. The re-arrangement of the subject-matter has been well thought out and should prove of distinct advantage in reference.

The first volume has been kept down in size to practically that of the last edition. It contains everything the physician and pharmacists

are likely to require for immediate reference on therapeutic matters, whilst the second volume acts as a supplement for further study. We can heartily recommend this work to the profession in India.

Achondroplasia, Its Nature and Its Cause —

By Dr. MURK JANSSEN, Lecturer on Orthopædic Surgery, University of Leiden, Holland. Publishers: Baillière, Tindall & Cox.

THE writer of this interesting monograph divides the phenomena of achondroplasia, a definite form of dwarfism, into two sections. The first he calls dwarf-phenomena, and they comprise a congenital shortness of the extremities, especially of the proximal parts of these, and of the sagittal diameter of the base of the skull, a small pelvis, a deformity of the bodies of the vertebrae, so that they form a cone with the base above, and an early development of the sexual organs with an excessive sexual appetite. The second section comprises mechanical malformations, or phenomena of infolding, the base of the skull is crumpled sagittally, so that the hard palate is bent, and is moved as a whole backwards towards the basis cranii, which is kyphosed, or if not the foramen magnum is flattened from front to back, while at the same time the sella turcica is diminished in size or is even absent and in the spine there is a dorso-lumbar kyphosis. The object of the treatise is to show that all these phenomena, and also others which are often associated with them, are most satisfactorily explained as having been caused by too small an amnion.

Too small an amnion might affect the foetus in one of two ways, either the general intra-amniotic pressure might be increased, or the small amnion might actually press on prominent parts of the foetus. The time at which the skeleton will be most affected by pressure will be between the second week, when it begins to form as condensed connective tissue, and the 8th, when bone begins to be generally laid down. Again the pituitary body begins to form from the second to the eighth week, and the deformity of the sella turcica might well happen then. Taking then some time during this period as that at which the phenomena of achondroplasia are initiated, it is significant that at the fourth week the embryo has three prominent points projecting from its generally ovoid outline, they are the face and neck at the cephalic pole and the extreme caudal end at the other. Normally the amnion is at this time not quite full, and forms an oval sac lying just clear of the foetus. If, however, the amnion is filled tight it will become a sphere, and in doing so will shorten in its former long diameter, and this shortening will bring it into contact with the three prominent points mentioned. The opposing pressures on the face and neck will force towards one another, and produce the deformities of the base of the skull which are so character-

istic of the disease, while the opposing pressures at head and tail ends will cause the spinal kyphosis. The excess of sexual activity is similarly explained by the crushing of the pituitary gland in the deformed sella turcica. Besides, however, these deformities produced by direct pressure of the amnion on the prominent parts of the foetus, the increased amniotic pressure is credited with the production of the other phenomena of the disease in this way. The increased pressure will force the foetal blood from the parts within to those without the amnion and so will diminish the nutrition of the foetus proper, while the parts whose nutrition suffers most will be those in which the blood supply is greatest, and in the foetus these are the growing skeleton. If this be granted then the actual deformities caused will be dependent on the degree of pressure, and on the period of foetal life at which it is greatest, variations in which will explain the ordinary and more unusual deformities associated with the disease. The discussion is fascinating and stimulating, and whether one is convinced or not the time spent in reading the book is for this reason time well employed.

Physiology of the Central Nervous System and Special Senses.—By N. J. VAZIFDAR,

L.M.S., Grant Medical College, Bombay. 2nd Edition. Messrs James & Sons, Bombay, 1912.

THE author in publishing this compilation in a second edition has carefully revised and enlarged his work. It provides the senior student with a brief résumé of a fair amount of the knowledge that would be expected from him by an examiner, otherwise the volume cannot be considered of much real value. Read in conjunction with a standard text-book on the subjects treated, it is calculated to assist the student in acquiring the requisite degree of knowledge of the nervous system and special senses.

The volume is very well put together, and the publishers are to be congratulated on the clearness of the type.

The Treatment of Infantile Paralysis —

By O. VUIPIUS, M.D. Translated by A. A. TODD, M.B., B.Sc., with introduction by J. J. CLARKE, M.B., F.R.C.S. Messrs Baillière, Tindall and Cox, 1912. 10/6 net.

THIS is a most important publication and should be in the library of every surgeon. It is full of rich clinical observation and is most beautifully illustrated. We do not know of any book on Infantile Paralysis that covers the same ground and deals with the subject in the same scholarly spirit. The translator is to be greatly congratulated on the benefits he has conferred on English-speaking members of the profession by making available to them the contents of this most valuable German work.

The work deals almost exclusively with the orthopædic treatment of the sequelæ of

epidemic myelitis, but a few introductory chapters have been added in connection with the symptomatology aetiology, and pathological anatomy of the disease. The rest of the book is divided into two parts of which the first deals with the therapeutic methods in use at the present time, the second comprising a description of the paralysis of the various parts of the body, and their treatment.

The author gives full emphasis to the views of others so as to present a well-balanced picture of the state of our knowledge at the present time. We have no hesitation in strongly recommending this splendid volume to the profession in India, both surgeon and physician, as within it will be found detailed methods of treatment of almost every lesion possible to be met with. There are over two hundred and forty illustrations, beautifully executed, and the whole production is most creditable to author, translator and publishers.

SPECIAL ARTICLE

"THE VEXED QUESTION OF THE SMITH OPERATION"

AS many of our readers who are interested in Lt-Colonel Henry Smith's Intracapsular Operation for cataract have not the opportunity of seeing the ever increasing literature on what the Editor of *The Ophthalmoscope* calls the "Vexed Question of the so-called Smith Operation" we herewith reprint two articles on this subject which have recently appeared, and to continue our strict impartiality on the subject, we give views on both sides. The first article is from Dr. Pontious and is copied from *The Ophthalmic Record* (in *The Ophthalmoscope*, p 612, August 1911) —

"Indulgence in personalities in what should be purely a professional matter is always to be deplored. In an article in the April number of *The Ophthalmic Record*, Col Smith, in order to explain some unfortunate results following his method of extraction, attributed to me an utterly unwarranted personal ill feeling.

It is quite true that I went to Jullunder unexpectedly and without prior correspondence. It is equally true that Major Smith made me welcome and, what was more than I had any right to expect, allowed me to operate on some twenty five cases under his direction, with all of which I was very pleased, but I did not understand that I would be expected to misrepresent facts, in favour of his method, after my return home.

At a meeting of the Washington State Medical Society, Dr. Wurdemann read a paper on the intracapsular extraction of cataract. Having so recently visited Jullunder I was expected to discuss the paper. One of three courses was open to me, I could refuse to tell what I had seen, I could politely prevaricate, or I could tell what I believed to be truth. Not being one of those who "bend the cringing knee that thrust may follow wrong" I did the last.

That Major Kilkelly would degrade himself to the extent of showing cases other than those that Major Smith had operated upon is not conceivable. Neither is it to be inferred that all of Col Smith's extractions turn out as unfortunately as did the Bombay cases. It simply shows that rather high percentage of Col Smith's cases do have unfortunate accidents and I am quite sure the percentage of them is higher than Col Smith himself is aware. I doubt very much if any man who has visited Jullunder believes that Col Smith himself knows the extent of his unfortunate cases. As an example I saw him extract, by the intracapsular method, a lens from a myopic youth, when, according to his own admission, he did not know in advance the condition of the vitreous or the amount of the myopia. That it was a highly risky thing to do was proved by the perspiration which came to the operator's brow while he was exerting what would have been apparent to the merest novice as unwarrantable pressure. As to the facilities for examining cases, of which he speaks, it is true that every facility for seeing operations was granted, but I was never invited to see cases after operation. However, on two occasions I reluctantly and with a feeling of intrusion, made morning rounds, with his native assistant. I was not shown as many cases as had been operated on and even these were exhibited in small, semi dark rooms without any of the artificial aids to examination.

During my ten days' stay I saw no case examined with an ophthalmoscope or by lateral illumination, neither did I see one case whose refraction had been worked out. My inference was that the average patient (peasant) left the hospital at the end of about a week without being thus examined and returned to the country from which most of the patients come. The artisans no doubt remained, or returned for glasses, but if the refraction of any considerable number of patients operated on were subsequently determined, it is quite likely I would have seen at least one of them during my ten days' stay. On one occasion a patient, who had been previously operated upon by Major Smith, appeared at the clinic, presenting clear pupillary areas. Without any examination other than that he made at the doorway, he unhesitatingly asserted that this patient would have 6/5 vision. By what occult power any surgeon can say, after mere inspection and without further examination what vision an eye possesses, is beyond my comprehension.

I have no doubt Col Smith regrets greatly that he permitted me to operate on some twenty five cases, but his regret is no greater than mine at having visited Jullunder. I was not disgusted, as he says, on the contrary, I felt greatly obliged for his hospitality, and left Jullunder in time to have some three days in Bombay before my ship sailed.

These unfortunate bickerings have no real value in determining the status of the operation. The truth of the matter is the intracapsular operation is not done by the men for whom we have the greatest respect as surgeons. For Col Smith to intimate that there is or was a conspiracy in London against him is ridiculous. Furthermore, I do not believe that Doctors Greene and Vail will be doing this operation on *private patients* two years hence, notwithstanding all that they have said about it since their return from Jullunder.

A prudent person must inevitably agree with Dr. Risley that "a man with Smith's opportunity and dexterity would get good results by a number of different methods." But the contention that the operation is suitable for other cases than double immature cataract where the patient cannot afford to wait for maturity, will not, I am sure, find favour with the men of best judgment.

In conclusion I wish to pay my highest respects to Col Smith as an operator. I nevertheless believe that he is simply stubborn in his insistence upon the merits of intracapsular extraction as a routine measure.

The situation was rather neatly expressed when Mr. Teacher Collins said to me, "you need that posterior capsule to support the vitreous."

COBB BUILDINGS,
Seattle, Washington

NEVIN D. PONTIOUS

On the other side we have the following article by Dr. A. J. Timberman, Ohio, which we extract from *Ophthalmology* (July 1911, p. 593) —

Whatever may be the individual opinions of those who have been to India and have worked under Smith's personal direction, it yet remains for the ophthalmic profession to place its stamp of approval upon the intracapsular operation. Any testimony, therefore, if honestly given, which may have any influence in helping ophthalmic surgeons to arrive at an honest conclusion as to the merits or demerits of this now famous procedure should be commended and constitutes my only apology for this paper.

The title as printed is a misnomer in that what lessons I have learned, and what observations I may have made, are not based upon the 207 cases which I personally operated, but as well upon a like number operated by my companion to India, Dr. King, and I should judge an equal number operated by Col. Smith himself, and others, so that my conclusions are based upon the observations of nearly or quite 600 cases instead of approximately 200.

I voiced an opinion in the Columbus Academy of Medicine somewhat over one year ago, that any operation necessitating a thorough training in its technique, and performance upon the living subject, under the direction of one previously so trained would never be a popular operation. I then felt that if a skilful operator according to the capsulotomy method, could read an accurate description of the technique of the Smith method, and see perhaps a few cases, and then could not do the operation, that it would be placed beyond the pale of popular usage by the ophthalmic profession. I wish to reassert that opinion.

My first three days in Smith's clinic were spent in observing the method in 30 cases, viz. 35 the first day, 19 the second, and 26 the third day. Being at least moderately well acquainted with the capsulotomy method, it was with not a little confidence that I essayed my first operation on the fourth day after my arrival at Amritsar. For three weeks thereafter my confidence was inversely proportioned to my stay in Smith's clinic. It looked so easy, it was so difficult. It seemed so simple, it proved so complex. It seemed so reliable, behold, it was the trickiest thing I had ever handled. Cases would go on beautifully in series of six, eight or a dozen, and then we would run on to one or two that would not behave according to the rule. And these are the very ones that make the training necessary. Anyone can do the perfectly easy ones. If we could only tell how they will act before operating! Smith can usually do this, but not always. An experience with 25,000 cases of cataract has given him a judgment hardier to acquire than the training that will equip one to properly handle all cases. I, as others had done, had read and looked on, and thought the operation rather easy. I tried it and found it difficult.

And then there is the great bugbear of the operation, viz. loss of vitreous. I presume few things have been more talked about and written about by men who have no reason to talk and write dogmatically than this one complication of the operation. And yet I venture the assertion that anyone, who sees enough cases done by a skilful man, will be convinced—no matter what his previous attitude may have been—will be convinced, I say, that loss of vitreous, *per se*, offers no reasonable objection to the acceptance of this method of cataract extraction. I have notes on my 207 cases which show that in 15 cases there was loss of vitreous. In 10 of these only a drop, in 2 a trace, in 3 some. Only in those marked some was there any considerable amount. One of these three was a very troublesome man, where the lens shot out on com-

pletion of the incision, and would not, therefore, be ascribed as a fault of any method of operating. In another there was leucoma of the cornea, which, by interfering with its flexibility, would enormously increase the difficulty of the operation. I have no note on the third case. But in my observation of the six hundred cases I did not see one case lost that could honestly be accounted for by this incident. I now use the term incident premeditatedly, for it is only in the rarest of cases that it is an accident, always remembering, however, that I am having in mind an operator who has been properly trained in the handling of the vitreous while doing the operation. My second lesson, therefore, taught me that the observation of many writers on the subject of loss of vitreous left them something yet to learn.

One of the rather astounding observations that it was my pleasure to make was the beautiful results in those cataract cases complicated with seclusion of the pupil. I fancy the most daring among us do not contemplate with much pleasure the handling of those cases where the whole pupillary margin is bound down to the anterior surface of the lens, by what we are pleased to call firm adhesions. We have all tried our best to soften these by various medicaments, to pull them away by atropin, or dispose of them by some operation. There was always the sure result of a thick capsule remaining for a secondary operation, to say nothing of the liability of an iritis, or, may be, something worse. But to see Smith proceed in the usual way to extract lenses in these eyes, to see these same so-called firm adhesions—which he says are not firm—give way, slowly, one by one, until the whole pupillary margin was freed to see the lens, surrounded by both capsules, in your hand, nevermore to displace the pupil and give yourself and your patient many a sleepless night, to contemplate the fact that in such an eye there could thereafter be no further impediment to the transmission of light, to observe these things was but to learn my third lesson, viz. the practicability of the Smith operation in this class of cases.

The intumescent lens is large swollen by its absorption of fluid, the iris bulged forward, often nearly obliterating the anterior chamber, and having a peculiar pearl-like sheen as seen through the pupil. These are the so-called tumblers, because if handled rightly they can often be made to pass through the incision bottom side up. They have their disadvantages, namely, shallow anterior chamber and tendency of their weak capsules to burst. They have their advantages, namely, an elasticity which permits them to be moulded in various shapes so that oftentimes they can be forced through an incision that otherwise would be too small. Besides, after tumbling, one feels a little surer of getting all the capsule out should it burst, or be ruptured by instrumentation in the final act of delivery of the lens.

The hypermature lens is really of two varieties, the one being the final stage of the intumescent variety, the other being the result of opacification and absorption from the beginning, there being no intervening intumescent stage. These lenses are more or less disc-like, very thin anteriorly, and with sharp peripheral borders. Both capsule and ligament are tough, which characteristics, together with its small size, make it the most difficult of all varieties to extract. Smith's characterization of its color, as being like that of course white soap, is not exact.

The third variety, which I care here to mention, is the immature cataract. That type of cataract barely, or not at all, visible to the naked eye, and yet may be, incapacitating the patient for active or profitable employment. Sometimes they make rapid progress toward complete opacification. My observation and experience, as well as that of other observers, testify that here is one of the best fields for the intracapsular operation.

In my judgment, the most potent objection to Smith's operation will be proven to be in the difficulty of finally adjusting the iris. It is a mechanical difficulty manifesting its fault more in its cosmetic appearance than in a functional or organic disturbance. It is easy enough

to understand that it is less difficult to smooth out an iris when a membranous structure intervenes between it and the vitreous than when no such structures separate them. The sticky vitreous clinging to the iris, together with the eye rotated far up, renders it difficult but not impossible to be absolutely sure of its final displacement. The pupil is less apt to have the characteristic and much desired keyhole opening. I do not think there need be more real inclusion of the iris angles than in the capsulotomy method, but there is more of a folding up or tucking away of the iridic angles upon the iris tissue itself than in the old method, but as this folded up portion is not attached to any capsular remains, it apparently does no harm. So far as I was able to observe the new pupil always remained as it was on the date of dismissal of the patient. You will find a smaller percentage of patients, operated upon by the Smith method, coming back for an operation for displaced or distorted pupils than you will among those operated by the old method. If there is not inclusion of the iridic angle in the wound itself there is nothing left to disturb it. And the vast majority of the comparatively few cases with inclusion of iris in the wound give little or no trouble since there is nothing tugging at it and pulling it in another direction. My observation here was that we may well forego the few cosmetic disadvantages of the Smith method for any one of many manifold advantages, *eq.*, elimination of the time necessary for the ripening of the ordinary cataract, or the certainty that there will be no secondary cataract.

I cannot refrain from mentioning the almost complete absence of iritis sequelae of the intracapsular operation. Say what we will we must admit the incomparable advantage of the Smith operation here. I will not have time to discuss the causes of post cataract iritis now further than to say that that chapter must be rewritten in the light of experience with the Smith method.

I have named only a few of the many observations one makes in a visit to Smith's clinic. Time does not permit me to discuss other matters.

A last word. The first, constant and final observation of a sojourner in the Amritsar clinic is the man Smith himself.

After one has travelled round this fine old earth of ours having manifold opportunities to study the various types of the genus homo there is a constant reversion to the Punjab plains, than which no place offers to an oculist a more interesting figure for contemplation. A great large, bulky Irishman with a heart as big as his body, with a keen intellect and a sharp eye, with tremendous odds against him both as to climate and environment, to say nothing of the antagonism of many in his own line of work, he is standing almost in the shadow of the mighty Himalayas preaching a new gospel to the oculists of the world. A gospel in which he believes—compelled to believe after an experience of nearly 25,000 cases, done under conditions that make one gasp who is accustomed to aseptic technique. How he ever gets such results as he does is the wonder of everyone who is permitted to observe his work. Forced by necessity to rely upon antiseptics it is hardly to be denied that operators the world over should get as good results as he does. How can he help being enthusiastic over his method when he sees, at first hand, not an isolated case or two, or even a few hundred, but thousands upon thousands of them? I have heard of no one visiting his clinic and staying long enough to handle all classes of cases who has gone away without an inoculation of this same infectious enthusiasm. I have heard of many who have looked on for a few days, or done an insufficient amount of work to make themselves proficient in the technique, who have been lukewarm, and a still smaller number actually antagonistic. Believing, as I do, that it is to be the operation of the future, I have no fault to find with anyone who does not so believe. But it is unfair and unscientific to try to bolster up that unbelief

with acknowledged inexperience, with little or no preparatory training, nor yet with a long list of insinuating assumptions as to possible dire results which no one's experience could justify. Rather let us all approach it in a fair spirit and an open mind, determined only on one thing—to *know* and to *accept* the truth.

Those interested in the subject will doubtless have read the very interesting review by Major Elliot, I.M.S., in *The Ophthalmoscope* (Sept, p. 668), of Dr. Derrick T. Vail's little book entitled *Smith's Cataract Operation*.

ANNUAL REPORTS

DISPENSARY RETURNS,

EASTERN BENGAL AND ASSAM 1911

At the commencement of the year under review, there were 534 hospitals and dispensaries of all classes in working order. During the year 19 new dispensaries were opened 1 was transferred from class V to class IV and 4 were actually closed. Thus at the end of the year the total number was 549. Of the two local board dispensaries closed during the year, one was at Haipur in Sylhet. This was closed, as the attendance did not justify the maintenance of a dispensary. The other was the Orang dispensary in the district of Darrang. This dispensary was formerly at Rangamatighat, but not being a success it was removed to Orang, there also, it proved a failure and was therefore closed.

The total number of in-door and out door patients treated at the hospitals and dispensaries of classes I, III and IV was 3,719,628 in 1911 against 3,548,961, in 1910, *ie.*, an increase of 170,667. Only 10 districts show a decrease and the rest an increase. The increases in the districts of Dimaapur, Bogra, Pabna, Sylhet, Goalpara, Kamrup and Sibsagar are accounted for by the opening of new dispensaries. The year 1911 was much healthier than its predecessor as indicated by the mortality from fever which was 18.82 in 1911 against 23.71 in 1910. The increase in the number of patients attending dispensaries in a healthier year is a sure index of the growing popularity of medical institutions. The percentage of the population obtaining medical relief in the dispensaries of the abovementioned three classes was 10.75 against 9.46 in 1910.

The largest number of selected operations were performed by the following officers during the year under report—Lieutenant-Colonel A. R. S. Anderson, I.M.S., Chittagong, 186 (including 80 extractions of lens), Lieutenant-Colonel E. A. W. Hall, I.M.S., Dacca, 177 (including 138 cataracts), Captain D. P. Gail, I.M.S., Mymensingh and Rajshahi, 76 (including 31 cataracts), Lieutenant-Colonel H. S. Wood, I.M.S., Rajshahi, 69 (including 48 cataracts).

BURMA 1911

On the 1st January 1911, there was a total of 259 hospitals and dispensaries in the province. Two hospitals at Rathedaung and Myohauing were opened in the Akyab district. The Mandalay canal and public works department, Kyaukse road dispensaries were closed and the Cantonment Hospital, Rangoon, ceased to work under the Civil Department with effect from the 1st September 1911. Under the railway, new dispensaries were opened in Henzada, Rangoon and Myitngé on the open line, and four hospitals and dispensaries were opened on the Southern Shan States' railway construction at Yinnabin Ghat, Lebyin, Simmôn and Kalaw and a dispensary on this line was also closed. As a result of these changes, the number of hospitals and dispensaries on the last day of the year was 264.

The number of in-door and out-door patients treated at state-public, local fund and private aided institutions aggregated 1,469,039 against 1,372,271 in 1910.

The percentages of death under the chief diseases during the year under report are, compared below with those of the previous year —

Disease	1910	1911
Injuries	3.05	2.9
Plague	73.47	72.4
Dysentery	13.8	17.4
Small pox	28.9	27.4
Pneumonia	38.6	39.00
Tubercle of the lungs	43.02	42.4
Diarrhoea	21.4	25.8
Malaria	2.8	2.8
Anemia	16.0	15.3
All other Diseases of the Digestive System	6.8	7.54
Cholera	61.06	56.1
Diseases of the Nervous System	12.03	11.9

These figures show a general improvement during the year under report.

The year 1911 is a notable one in the history of the Rangoon general hospital as the new hospital buildings were finally completed and fully occupied. The hospital was formally opened on the 4th April 1911 by His Honour the Lieutenant-Governor. Though the new hospital was in working order for only nine months in the year, the advantages of the new building have been greatly appreciated by the public with the result that the number of patients treated has materially increased, the increase being most marked among the female patients, specially among Burmese females. Though this increase may be attributed partially to the closing of the out-door department of the Dufferin Hospital, Major Barry reports that the extra comforts of the hospital and the fixing of special clinics for gynaecological and eye cases has been the main cause for the larger number of women patients. The inadequacy of the nursing staff was also met by an addition of two English trained sisters and 20 nurses.

PUNJAB, 1911

The number of hospitals and dispensaries of all classes in the Province on the 1st January 1911 was 464. Seven were established during the year and six were closed, so that at the end of the year 465 remained open. Of the new dispensaries, one belongs to class II (iii), three to class III, and three to class VI.

The number treated during the year amounted to 4,097,749 against 4,297,453 in 1910, or a decrease of 199,704. The decline is due to the year 1911 being a particularly healthy one, malaria which invariably causes the greatest number of admissions caused over 200,000 less patients to come for treatment.

During the year 233,637 operations were performed against 220,094 in 1910. Of these the selected operations numbered 25,817 in 1911 as compared with 24,778 in the previous year, or an increase of 1,039. The number which terminated fatally was 425, which gives a death-rate of 18.

The selected operations include 11,564 for the extraction of the lens, of which 9,252 were successful, giving a percentage of good vision of 80.01, amputations accounted for 576 with 27 deaths, stone in the bladder for 2,015 with 72 deaths, hernia for 262 with 14 deaths, abscess of the liver for 110 with 16 deaths, abdominal sections for 67 with 11 deaths, ovariectomies for 50 with 9 deaths, and Caesarean sections for 32 with 18 deaths.

Among civil surgeons the principal operators were (1) Lieutenant-Colonel H. Smith, V.R.S., with 1,643 operations, (2) Major E. S. Peck, with 955 (in six months), (3) Major H. Amisworth, with 500, Major E. V. Hugo, with 271, Captain W. W. Jendwine, with 198, and Captain Halliday, with 197. Of the assistant surgeons who distinguished themselves I desire to bring to notice Lala Sri Ram who performed 1,252, Khan Sahib Diwan Ali 781, Bhai Dalip Singh 510, Lala Baij Nath 477, Munshi Nazir Hussain 382, and Mir Muhammad Ismail 354 selected operations. Among sub-assistant surgeons I must again make special mention of Lala Mathia Das who surpassed all previous years' records by performing no less than 2,873 selected operations, in which are included 2,534 for cataract and 42 for stone. In recognition of his good surgical work he was decorated with the Kaiser-i-Hind silver medal. The others deserving of mention are Lala Ganga Ram with 343, Pandit Nand Lal with 232, Pandit Balmo-kand with 153, and Sayad Nawab Shah with 148.

No record of the year's operative work would be complete without mentioning the excellent work of Doctors Taylor and Newton at Jalalpur Juttan, where they performed respectively 342 and 277 selected operations, and of Dr. Mavi White at Sialkot and Dr. Edith Brown at Ludhiana. The former performed 205 and the latter 127 selected operations.

Correspondence

PHYSALOPTERA LARVÆ IN THE PERITONEUM

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Major Milne ends his interesting article in the September number of the *Indian Medical Gazette* by asking me to account for the presence of *Physaloptera* larvæ in the peritoneum. As Major Milne states, I received from him for identification a piece of peritoneum from a squirrel containing a number of cysts in each of which lay a *Physaloptera* larva, and shortly afterwards some adult members of the same genus from the stomach of a cat. The normal habitat of the adult members of this genus is the lumen of the alimentary canal usually of the stomach of Carnivora. Regarding the development I have by me no book of reference in which this is described so that it is merely conjecture to say that I believe this genus to follow the line of development of some other genera of nematodes and to have two hosts, as distinct in their relations to the development of the parasite as are the two hosts of the strobilus and cysticercus of an ordinary tape worm. That is to say the products of conception of the adult worms pass from the alimentary canal of the primary hosts into the outer world, and the larvæ, reaching and penetrating the secondary host come to rest and encyst in some suitable part in this case the peritoneum. Development would cease at this point unless the affected portions of the secondary host were devoured by a suitable carnivora, but when in this way the larvæ have reached the stomach of their primary host they will develop into adults.

I should like to take the opportunity to state that I shall be glad to identify, to the best of my ability, all worms sent to me, and that I shall deem it a favour to receive them. The last applies even in the case of the commonest worms as well, I think, be evident when I add that in the case of the last prisoner treated in the local jail for ankylostomiasis out of 32 worms recovered 31 were *Necator americanus* and only one was an *Anchylostoma duodenale*. The average proportion here seems to be about 1 of the former to 4 of the latter, but the absolute percentages and the case percentages remain to be worked out for these worms so far as India is concerned, and I should be glad to receive material from other parts of India to help in doing so.

I desire to add a word on the methods of preservation. Nematodes are best killed by hot spirit because, if dropped into this alive the worms stretch themselves out straight at the moment of death, and can be rolled round between cover and slide, and examined from all aspects. The spirit should be of the strength of 70% which for all practical purposes is made by mixing 3 parts of rectified spirit with one of water, it should be raised to the boiling point in a test tube or other convenient vessel, and should then be taken off the flame, and as soon as bubbles have ceased coming off, the worms should be dropped in one by one. They should not of course be dropped in while boiling is actually going on, nor should the fluid be raised again to the boiling point while worms are still in it or bubbles will form inside them, and bursting them, render them more or less unsuitable for examination.

I am, &c,
CLAYTON LANE,
Major, I.M.S.

DENGUE FEVER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—I shall be highly obliged if you will kindly allow a small space in your esteemed journal for the few lines on Dengue Fever which may interest your readers.

Probably it was about the year 1902 an epidemic outbreak of Dengue Fever occurred (which is common in Lower Burma). I was then in subordinate charge of the European wards at the Rangoon General Hospital and had ample opportunity to watch the course and progress of the malady specially of the different types of rashes which I noted down carefully. If I remember well, more than one hundred cases came under my observation but I did not meet with such a case as that treated while I was doing duty at the Tharymyo Hospital in 1910.

The patient was a Burmese girl, aged 7 years, of higher class. She was brought into the hospital on the second day of her illness and was treated as an out-patient by the assistant surgeon. I saw that her body was covered with

About 2 or 3 days after this I was called one evening to attend her.

The history shows that about 2 days previous to her attendance at the hospital, she was playing with her playmates she suddenly felt a severe pain in the knees and could not walk, so she was carried home by her parents who thought that the child might have met with an accident. On the same night she had high fever and on the morning her body showed the rash as previously mentioned.

Rashes—Initial—commenced to appear on the second day in one crop and disappeared on the third day. They were not itchy at all.

Terminal—I found her body was covered with diffused Erythema this I was told started on the evening of disappearance of the initial rashes. The erythema commenced from the upper part of the body (from the clavicular regions) and extended downwards as far as below the knee joints and on the upper extremities as far as the back of the fingers. The head, face, legs, feet and palm of the hands were free from any rash.

As the Erythema began to fade away by becoming darker in shade, the discoloration stopped and the desquamation started in the same way from the starting places. Scales came off in large patches, very thin and dry with minute holes, resembling "Pin holes" desquamation of Scarlet Fever as stated in the text books.

Temperature—Ranged from 102° to 104° till the sixth day of attack, on the seventh day went up to 105° which persisted for next four days, i.e. a day or two after the Erythema had set, reducing one or two degrees for a short period. Cough now increased and a small patch of pneumonia at the base of the left lung developed. On 11th day T came down by crisis and fell to 97°. Resolution began in the lung. Inflammation of the tonsils and the lymphatic glands took a favourable turn and she was cured within a few days. The treatment was adopted according to the symptoms which prevailed.

Remarks—Had I not known that Dengue Fever was prevalent in the town, this case might have been confused with Scarlet Fever or Measles but then Scarlet Fever is unknown in this country, at least I have not seen any case. In Measles one finds the running of the nose, injection of conjunctiva etc., and the rashes do not desquamate in such a manner as described above.

This troublesome though not dangerous, malady plays an inconspicuous part amongst the diseases accompanied with rashes.

I beg to remain
Sir,
Your most obedient servant,
U N DEY,
Sub Asst Surgeon, Civil Hospital,
Tharayaddy, Burma

"EMETINE AND TROPICAL DIARRHOEA"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR—During the past three years there have been in this district a considerable number of cases among Europeans of a kind of diarrhoea which closely resembles Hill Diarrhoea. It is characterised by pain and distention of the lower abdomen, dyspepsia, large white, liquid and often frothy stools passed mostly in the morning, loss of appetite and weight.

Treatment this was unsatisfactory, no drug seemed to have any effect. Santonin, mercury, and the so-called intestinal antiseptics all failed, a milk diet when rigidly followed resulted in a slow recovery after several weeks, sometimes months, several cases went about their work on a milk diet, the disease wearing itself out gradually while the patients remained below par for several months after apparent recovery. The cases generally occurred in the first half of the year.

Some weeks ago I had a severe case under my care, a strong young planter who had all the above symptoms. Though spicue and Hill Diarrhoea are not supposed to be malarial diseases, the extraordinary potency of emetine recently demonstrated by Major Rogers I.M.S., suggested its use in this case. Emetine Hydrochloride grain $\frac{1}{2}$ was administered hypodermically in the abdominal wall twice on the first day, and $\frac{3}{4}$ grain on the morning of the second day. Milk diet continued. The patient found the pain of the injection trifling though tenderness remained at the sites of injection for several days.

The result was good the second injection was on the 11th September. He stated that he felt distinctly better after the injections, had only one stool per day, semi solid and a tinge of returning bile, on the 13th the stool was

almost normal in consistency but rather pale. Pain and distention had disappeared but he still feared to try mixed diet. On 15th on mixed diet stools normal, and by 18th was in good health again playing tennis.

This isolated case of successful empiricism is brought forward as possibly the treatment may be found efficacious in similar cases and in Hill Diarrhoea which is said to be common in Darjeeling and Kaiseong. I have not before seen a case of this kind recover so rapidly or so completely and I would recommend a trial of the drug in such cases as in any case it can do no harm and causes but the most trifling amount of pain.

BOJULI P. O., } Yours faithfully,
Dairang, Assam } I. A. VALENTINE, M.D. (Dublin)

"QUERY"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR EDITOR,—I shall feel it an esteemed favour if you or any of your numerous readers throw light on the following—

(1) Whether the onus of producing a medical certificate in cases of simple hurt under section 323 I.P.C., lies with the injured party or is it the function of the court to provide him with such certificates?

(2) Whether a medical officer in charge of a hospital or dispensary is entitled to charge his usual fee for a medico-legal examination in non cognisable offences, i.e., in above mentioned cases if the injured party be sent up by the court for medical examination and opinion.

AN ENQUIRER

ACTION OF WHITE SANTONIN IN NIGHT BLINDNESS DUE TO INTESTINAL WORMS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—I had a great mind to send this article long ago, to be published in your esteemed paper, but it has shrunk from so doing, as from none of my available books I could find any information with regard to wonderful therapeutic action of White Santonin ordinarily supplied from Government Medical Stores in India. I referred the matter some three months ago to my Medical Officer, Captain J. B. Dalzell Hunter, I.M.S., Agency Surgeon in Siestan who kindly advised me to send the two cases that derived benefit at my hands from Santonin to your paper.

First case—A grivona, aged 30 years came to my dispensary complaining of night-blindness. I recognized him and asked him whether he had come to the dispensary about a year ago suffering from gonorrhoea. He replied in the affirmative. He was also asked whether he ever suffered from chancre or any syphilitic rash on his body. He answered in the negative. I examined his eyes, throat, private parts, etc., but could find nothing specific but all the same I suspected that he must have suffered from syphilis. I put him on Pot. Iodide, Ammon Carb and Tinct. Cinchona Co., and dropped H.P. lotion (1 in 500) into his eyes, and advised him to continue medicines for a time and that since that day his night blindness was cured. A few days later I happened to see him in the village and asked him how he was. He replied that there was no sign of his night blindness.

Second case—This patient was a well to do man, aged 45 years. He had much to do with writing, and was wearing eye glasses. One night he sent for me and said that he could not see with his right eye. I gave him a dose of Santonin Orisomol, and Jalapino at bed time and 30 big worms were expelled from him, and his night blindness was no more. About eight years prior to this, this patient had suffered from gonorrhoea and syphilitic rash.

I apologise for intruding upon your most valuable space to insert these two cases.

Yours truly,
MIRZA MUHAMMAD BEG,
SECOND CLASS SENIOR SUB-ASSISTANT SURGEON,
H. B. M.'s Consulate Dispensary

BIHARI (PERSIA) }
9th September 1912 }

"SANITARY REORGANISATION IN BENGAL"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The Sanitary Reorganisation Scheme which has lately been sanctioned by the Secretary of State and published in the *Gazette of India* of the 25th May last, opens a new field for the educated Indians. The time is ripe when the people of this country should be taught to combat such scourges as malaria, plague and other preventable diseases which levy such a heavy toll year after year. This can only be efficiently carried out by a general improvement in the condition of urban sanitation by the introduction of a trained staff of sanitary officers. Now that a detailed scheme is being drawn up to organise a sanitary service for Bengal with health officers in charge of large Municipal towns and sanitary inspectors for rural areas, I beg to make the following suggestions at this opportune moment. Your editorial comments in the July number of the *Gazette* exposed certain drawbacks of the scheme, and it appears to me as one having some experience as a health officer of an important municipality that if to my humble suggestions a little consideration is given the services will not only attract properly qualified men, but will eventually be a success.

A—THE HEALTH OFFICERS' SERVICE

1. This service should be on an equal footing with the Provincial Medical Service, i.e., the health officers should be gazetted officers and should enjoy all the rights and privileges of a Government servant as regards leave, pension, &c.

2. The health officers should be absolutely independent of the Municipal Commissioners and should be vested with both administrative and executive powers. They should be the direct subordinates of the Deputy Sanitary Commissioners and their appointments and dismissals should entirely rest with the Local Government.

3. Teachers of hygiene and of subjects connected with the public health in the Government Medical institutions and in the proposed training schools for Sanitary Inspectors should be selected from among the members of this service.

4. They should be granted suitable conveyance allowances and special allowances for holding school or other appointments.

5. They should have sanitary inspectors in the ratio of 1 to every 15,000 of the population to assist them in the discharge of their duties.

6. Health officers of the second class must be either L.M.S.'s or M.B.'s of Indian Universities or holders of qualifications equivalent to these and all new recruits must undergo a special course of training in public health (to be prescribed by the Government) for a period of not less than six months, while those possessing the B.Sc. (Pub. H.) or B.Hy. degree or the diploma in Tropical Medicine and Hygiene should be considered equally eligible—along with the diplomates in public health—for the first class appointments.

7. A certain percentage of the appointments of the first class should be thrown open to health officers of the second class who have shown special merit and have put in at least 20 years of good service.

8. Health officers of the first class should be appointed in municipal towns having a population of at least a lakh, while second class officers should be posted in towns having a population under 100,000 but above 30,000.

9. As in the case of the first class officers higher pay may also be granted, in exceptional cases, to officers of the second class.

10. The duties of the health officers should be defined by the Government and the hours of their work should be altogether six hours, two of which should at least be devoted to outdoor inspections, every morning.

B—THE SANITARY INSPECTORS' SERVICE

1. The Sanitary Inspectors need not be qualified medical men (Sub Assistant Surgeons) but could be selected from persons who have at least passed the matriculation examination. They must undergo a course of training for "certificate in sanitary knowledge" for a period of not less than 18 months under arrangements to be made by the Government. In the case of Sub Assistant Surgeons the period of training may be limited to nine months.

2. Their initial pay should be Rs. 35 a month (with a like allowance of Rs. 5) rising to Rs. 75 by a triennial increment of Rs. 10. A superior grade on Rs. 100 per month may be created for those who have put in 20 years of good service.

3. Their duties should be defined by the Government.

Moreover it seems reasonable that the qualification restrictions for health officers of the first class may be relaxed in favour of those who are already in service and each individual case may be dealt with according to its own merits.

It is necessary that there should be a laboratory attached to the office of each Deputy Sanitary Commissioner where

samples of foodstuffs &c, could be sent for examination by sanitary officers within their own circle. Such a central position of the laboratory would facilitate the examination of food stuffs of a perishable nature. Since the Government resolution says that the necessity for a British diploma in public health for health officers of the first class will only be temporary, it is hoped that early facilities will be granted for enabling candidates to qualify themselves in this country.

I have, &c.,

J DASS,

28th August 1912

Municipal Health Officer, Calcutta

THERAPEUTIC NOTES

CORRECTION

In our July issue we referred to some excellent samples of powder and soap prepared by the Esolent Compounds, Limited. The title word was printed Escolent, which we desire now to correct. We also notice that the highly commendatory remarks of the *British Medical Journal* were made with reference to Esolent Compounds and not with regard to the powder and soap.

MARTINDALE'S SPECIAL PREPARATIONS

We have before us a copy of Martindale's Indian Price List which deals extensively with their special preparations scientific apparatus, clinical outfits etc. Martindale's productions have a very large sale in India and the colonies, and we can thoroughly recommend this catalogue and price list to the profession in India. Messrs Kemp & Co., Bombay, are the local agents, with whom special arrangements have been made to hold a representative stock. We might particularly mention some of the more important items listed, such as Amyl nitrate capsules, nitroglycerin tablets, asthma fluid, perfumed formosyls, inhalers, phenoloid disinfectant, vaccines etc.

REGULIN

Regulin, as a remedy for that curse of modern society—chronic constipation, is well spoken of by those who have had experience with it.

Therapeutic advantages.—Regulin is a natural vegetable product possessing marked absorbent qualities and retaining the water it has absorbed in such a manner that it is not given off again within the intestine but passes through the bowels unchanged with all the absorbed moisture. It has no irritating properties either mechanical or chemical. Its action consists in softening and loosening the feces and in preventing their contraction into hard bullets. In order to stimulate the ejection of the softened feces a very small proportion of a vegetable aperient has been added to the original vegetable substance. Special tests have shown that this aperient does not begin to act until it has reached the intestine and that it assists the action of the principal ingredient by stimulating the membrane of the intestine to evacuate its contents. Regulin therefore is not in itself a cathartic, but an agent which softens the feces and causes them to be evacuated at the proper time.

A NEW COATING FOR PILLS

Messrs Smith Stanistreet & Co. Calcutta have carried out some valuable experiments with the view of arriving at a more satisfactory coating for tablets or pills of potassium permanganate than those in general use. Those coated with salol or keratin—the usual substances—have a tendency to stick together and run into solid masses when stored.

The aim kept in view was to find a coating that would withstand the acid secretion of the stomach, and yet dissolve readily in the alkaline fluids of the intestine. Another necessary desideratum was that the coating should stand the Indian climate, specially in the rains.

The investigations carried out by Messrs Smith Stanistreet & Co. proved salol to be useless on account of its low melting point and also its inability to withstand the acid secretion of the stomach. Keratin for mechanical reasons and also its inability to stand acid pepsin was also considered unsatisfactory.

After a careful series of tests the conclusion was arrived at that a coating of stearic acid to which some Japan wax had been added fulfils the conditions laid down above.

The tests were carried out with this mixture against acid—5% Glycerole pepsino in 0.2% Hydrochloric acid alkaline—2% Liq. pepsin in 0.7% Soda bicarbonate and the results were so satisfactory that this firm of chemists is placing tablets and pills of potassium permanganate, so coated, on the market.

EXTERMINATION OF VERMIN SOLUTION D

The extermination of vermin on ships, and the prevention of their reappearance, has long been a problem with steam ship owners that has hitherto defied solution.

The inconvenience that these pests cause is by no means the only reason for their destruction as during the last year or so medical research has definitely traced the propagation of a number of infectious diseases to parasitic vermin.

On ships bugs inhabit the cracks and crevices in woodwork linings in bulkheads, and in the framework of bunks, and once they have effected a lodgment all attempts to rid the ship of them have so far been unavailing. It has been found that even after the removal and renewal of bunks and partitions, the conditions are soon again as bad as ever, for if all the insects are killed, it is absolutely impossible to get rid of the eggs which will hatch out as soon as the temperature is favourable.

By the systematic use, however, of Solution D with the Sprayer devised for this purpose, the vermin are quickly cleared out and then return prevented at very small cost of material and labour and without the necessity of removing bunks and other fittings.

There are a number of preparations which may kill insects if sprayed upon them, but in the case of Solution D, not only is the liquid and its vapour absolutely fatal to all forms of insect life, but this preparation possesses the power of penetrating the protective covering that encloses the egg and destroying the larva within. On this point alone depends the entire success of any insecticide, as unless the eggs are destroyed, the vermin will reappear again and again.

The Sprayer is a strongly made copper machine, with a continuous pneumatic action full directions of how to use it will be found inside the lid of the box.

SOME INTERESTING EFFECTS OF BROMURAL IN A CASE OF ADVANCED DIABETES

Reported by Dr Beeck Medical Superintendent of the German Hospital in Buenos Aires. (At present of Auerbach in Hessen) (Allg. Med. Centr. Zeitung, 1911 No. 25)

The Author begins by stating that he was induced to include Bromural among the comparatively few drugs used by him for the following reasons—

The absolutely natural character of the sleep obtained by Bromural and the entire absence of disagreeable after effects.

The rapid absorption and non-cumulative action of the preparation, and its excellent tolerability by the stomach.

The absence of effects upon the heart and respiration.

He reports a case as illustrating an interesting action of Bromural, by way of the nervous system, in a diabetic female.

The patient, aged 79 suffered from severe neuralgia of the brachial plexus and complete sleeplessness. A small amount of sugar in the urine disordered twenty years ago quite disappeared when a rigid dietary was adhered to for two years. In 1900 cataract formation in the left eye was diagnosed by a specialist, and sugar was again found in the urine. Gradually however, a condition of sleeplessness supervened which became increasingly worse and was accompanied at times by mental depression and neuralgic pains in the left shoulder and arm. Six months ago the neuralgia had become much worse and the urine contained 5% of sugar. Still no diabetic cure was undertaken, but the neuralgia was treated electrically and two tablets of Bromural were given every night at bed time. The general condition of the patient and especially the mental symptoms, improved within a few weeks, the neuralgic pains diminished until they amounted only to a dull feeling of pressure experienced at times, after the second day the patient slept in a healthy manner, sleep being interrupted perhaps only once or twice for a few minutes during the night, after about five weeks the patient declared she had not felt so well for years.

The whole question of improvement in this case turns, of course, upon the good sleep enjoyed by the patient for which Bromural must be thanked, and though the latter was discontinued after five weeks the patient continued to sleep well and enjoy moderately good health.

Service Notes.

MAJOR CLARENCE FORBES FARNSDALE of the Madras Medical Service retired on 10th September 1912. He was born on 28th February 1864 educated at Aberdeen where he took the M.A. in 1886 and the M.B. Ch.M. in 1889, and entered the I.M.S. as Surgeon on 31st March 1890, becoming Major on 31st March 1902, and Lieutenant-Colonel on 31st

March 1910. He served on the North East Frontier of India, in the Chin Hills in 1892-93, and received the medal for that campaign, with a clasp. Most of his service has been spent in civil employ in Madras, chiefly in the Jail Department. For some years he was Senior Medical Officer in the Andamans. His last appointment was that of Superintendent of Rajamandil Central Jail. Since 10th March 1912 he had been on furlough.

MAJOR PUTENEY CHARLES GABBETT, of the Madras Medical Service, retired on 26th August 1912. He was born on 19th October 1868, took the M.R.C.S. and L.R.C.P., London, in 1891, and entered the I.M.S. as Surgeon Lieutenant on 27th July 1892, becoming Surgeon Captain on 27th July 1895 and Major on 27th July 1904. He served on the North West Frontier of India in the Tirah campaign, in 1897-98, receiving the medal with two clasps. Most of his service, however, had been spent in civil employ in Madras. After holding for some years the posts of Professor of Surgery in the Madras Medical College and First Surgeon of the Madras General Hospital, he went on two years' furlough from 27th August 1910.

LIEUTENANT COLONEL JOHN SCULLY, Bengal Medical Service, retired, died at Eastbourne on 1st August 1912. He was born on 3rd December 1846, educated at the Middlesex Hospital, and took the diplomas of M.R.C.S. and L.R.C.P., London, in 1871, also the dental diploma of the English College being the only officer of the Bengal Medical Service who held a dental diploma. He entered the I.M.S. as Assistant Surgeon on 30th March 1872, became Surgeon on 1st July 1873, Surgeon Major on 30th March 1884, Surgeon Lieutenant Colonel on 30th March 1892, and Brigade Surgeon Lieutenant Colonel on 9th April 1897, and retired, with an extra compensation pension, on 8th April 1899. The Army List assigns him no war service. He served for some time under the Foreign Office and, while Medical Officer of the Gilgit Agency, described a new species of rat, called after him "Scully's rat." Most of his service, however, was passed in the Assay Department, and for some years previous to his retirement he had been Assay Master of the Calcutta Mint.

SURGEON MAJOR BERNARD KENDALL, Bengal Medical Service, retired, died suddenly at Upper Norwood on 3rd September 1912. He was born on 21st June 1831, took the M.R.C.S. in 1853, and entered the I.M.S. as Assistant Surgeon on 4th August 1855, becoming Surgeon on 4th August 1867, and Surgeon Major on 1st July 1873, and retired on 22nd February 1879. He served in the Indian Mutiny in 1857-58.

SANITARY DEPARTMENT

THE Government of India have recently had under their consideration the position of the Sanitary Commissioner with the Government of India and the question as to what changes are necessary in the functions and duties of the appointment so as to increase its utility and efficiency.

WITH a view to secure the better co-ordination and co-operation of the Sanitary and Medical Departments, it has been decided that the Sanitary Commissioner shall in future be subordinate to the Director General, Indian Medical Service, to the extent originally recommended by the Government of India in 1904 and that work connected with bacteriological research shall also be placed directly under the latter officer. In regard to administrative questions and matters affecting the personnel of the sanitary services, the Sanitary Commissioner will be in the position of a staff officer to the Director General, Indian Medical Service. He will be given independent authority in technical sanitary matters, with power as at present to correspond direct with the Government of India. He will occupy the position in regard to local Governments and the officers under them laid down in paragraph 12 of the Resolution No. 1273-1290, dated 8th September 1904. In order to relieve him of as much routine work as possible the office establishments of the Sanitary Commissioner and the Director General, Indian Medical Service, will be amalgamated. The Statistical Officer will, in future, assist the Director General, Indian Medical Service, in the control of the sanitary section of the office as well as in the guidance of research work and the Bacteriological Department. He will also edit 'Paludism' and the 'Scientific Memoirs' under the direction of the Director General, and his designation will be altered to that of the Secretary to the Director General, Indian Medical Service (Sanitary). The Sanitary Commissioner will, under these arrangements, be able to tour freely and regularly throughout India with a view to co-ordinate the lines of development, to inspect works of sanitation actually in progress, to advise on projected schemes and generally to disseminate the knowledge acquired in the different provinces.

THE statement attached to these notes contains details of grants which have been made in recent years from Imperial Revenues towards sanitation and research. In every province important schemes for the improvement of urban sanitation are now in course of execution. A preliminary survey has been in progress in several provinces with a view to the preparation of schemes designed to effect the improvement of malarial conditions and in particular to exterminate if possible the anopheles mosquito in selected areas. Projects are now ready in more than one province, and grants are being made for their execution from Imperial Revenues. The data thus obtained will it is hoped, be of very great value in planning future preventive measures. The important questions of controlling and regulating the expansion of growing towns and of strengthening the existing powers of local authorities in dealing with congested urban areas are ripe for consideration and discussion, and the Government of India have recently addressed local Governments on these subjects. A scheme for the general reorganisation of the sanitary services throughout India has received the sanction of the Secretary of State, and with the introduction of a trained staff a general improvement in the condition of urban sanitation may reasonably be expected. A wide sphere of useful work, therefore, lies before the Sanitary Commissioner as an advisory authority, and the Government of India believe that the appointment under its new conditions will be of increased benefit to themselves and to local Administrations.

Statement showing the grants made in recent years to Provincial Governments from Imperial revenues for sanitation

1. In addition to the annual recurring imperial grant of 30 lakhs which was made in 1908 for expenditure on sanitary improvements with special reference to the prevention of plague a special non-recurring grant of 57 lakhs was made in 1910-11 of which five lakhs were intended for the promotion of research and the balance was allotted for expenditure on urban sanitary works in the various provinces. The grants for urban sanitation were distributed as follows—

	Rs
Madras	4 25 000
Bombay	4 25 000
Bengal	10 00 000
United Provinces	10 50 000
Punjab	5 00 000
Burma	4 00 000
Eastern Bengal and Assam	4 00 000
Central Provinces	2 00 000

A sum of 50 lakhs was given in addition as a grant towards the works being carried out by the Bombay Improvement Trust.

With the nucleus of 5 lakhs for the promotion of research, the following steps have been taken. Major James has been deputed to the Panama Canal to investigate yellow fever in its endemic area. An enquiry in connection with the disease known as Kala Azar is being conducted by Captain Mackie and Dr. Koike and another enquiry regarding cholera by Major Greig and Captain Gloster. Mr. Hewlett the Imperial Entomologist has been provided with assistants for conducting research on disease carrying insects.

2. In 1911-12 further special grants of 50 lakhs towards approved sanitary schemes in urban areas and of 10 lakhs for research and prevention work were made.

The grant of 50 lakhs was distributed as follows—

	Rs
Madras	8 00 000
Bombay	6 50 000
Bengal	7 25 000
United Provinces	8 00 000
Punjab	6 17 000
Burma	1 00 000
Bihar and Orissa	4 62 000
Central Provinces	4 00 000
Assam	1 46 000

Of the 10 lakhs for research 4 lakhs have been expended on refitting and extending laboratories as follows—

	Rs
(a) Improving and refitting the laboratories at Patel	2 00 000
(b) Construction and equipment of laboratory at Rangoon	1 15 000
(c) Establishment of a bacteriological laboratory in connection with the Pasteur Institute at Myingyo	85 000

Rs 50 000 has been given for the extension of the Central Research Institute Kasauli and Rs 50 000 as a grant for extension of rat proof buildings in Fraser Town Bangalore, as an experimental measure against plague.

Five lakhs will be distributed among various provincial Governments as a grant towards matured anti-malarial schemes, and also for an anti-stegomyia survey in the chief

ports of India as a preliminary to measures against the importation of yellow fever.

3 In addition the sum of about 4½ lakhs has been distributed among minor administrations during the last two years and a subvention of 25 lakhs has been made towards the water works and drainage scheme of the city of Madras.

4 A recurring grant of 2½ lakhs per annum has been made to assist local Governments in introducing the scheme for reorganisation of the Sanitary services sanctioned by the Secretary of State.

5 During the last two years the Imperial grants for sanitation have aggregated 18½ lakhs, and for research work 15 lakhs.

MEDICAL DEPARTMENT

In supersession of the rules contained in Army Department Notification No 31, dated the 13th January 1911, the following regulations for the grant of Study Leave to officers of the Indian Medical Service are published for information—

Regulations regarding the grant of Study Leave to Officers of the Indian Medical Service

1 Extra furlough for the purpose of study may be granted to officers of the Indian Medical Service on the recommendation of the Director General, Indian Medical Service.

2 The period of such Study Leave will be calculated in the case of an officer taking Study Leave while under Military Leave Rules at the rate of one twelfth of pension service, and in the case of an officer taking Study Leave while under Civil Leave Rules at the rate of one twelfth of the same service as qualifies for his furlough under Articles 302 and 303 of the Civil Service Regulations up to a total in any case of 12 months in all during an officer's service.

3 Study Leave may be taken at any time but will not be granted more than twice in the course of an officer's service. The conversion under Rule 5 of part of an officer's furlough into Study Leave does not count as a grant of Study Leave within the meaning of this rule.

4 The minimum period of study which will render an officer eligible for Study Leave shall be two months.

5 The minimum period of leave granted solely as Study Leave shall be six months. Time spent on the journey to and from India by an officer whose Study Leave is not combined with any other kind of leave will reckon as Study Leave but the allowance specified in Rule 10 will be granted during the period of study only. An officer whose Study Leave is combined with any other kind of leave will however, be required to take his period of Study Leave at such a time as to return at its conclusion, a balance of other previously sanctioned leave sufficient to cover his return journey to India.

When an officer has been granted a definite period of Study Leave and finds after arrival in England that his course of study will fall short of the sanctioned period to any considerable extent, his absence from India will be reduced by the excess period of Study Leave unless he produces the assent of the authorities in India to his taking it as ordinary furlough.

6 Study Leave can be combined with any other kind of leave, provided the period occupied in study is not less than two months and in the case of leave on medical certificate, provided that the Medical Board at the India Office certifies that the officer is fit for study. In the case however of officers in military employment Study Leave cannot be taken in continuation of the combined privilege leave and furlough admissible under the terms of India Army Order No 64 of 1901, if the total period would thereby exceed eight months but Study Leave may be so taken provided such leave is for not less than two months and the total period of combined privilege leave, furlough and Study Leave does not exceed eight months, this limitation to eight months does not however, apply in the case of Study Leave combined with privilege leave alone. The total period of absence from duty in India in the case of officers under the Leave Rules of 1886 for the Indian Army, will be strictly limited to two years.

7 Except as provided in Rule 8 all applications for Study Leave shall be submitted with the officer's certificate to the Director General, Indian Medical Service through the prescribed channel and the course or courses of study contemplated and any examination the candidate proposes to undergo shall be clearly specified therein.

8 Officers on furlough who wish to have part of their furlough converted into Study Leave should address the Under Secretary of State India Office, and should furnish a statement showing how it is proposed to spend the Study Leave. Similarly officers on furlough on other leave who desire to have it extended for purposes of study should address the Under Secretary of State, but in addition to the statement of the proposed study they must support their applications with documentary evidence of their having obtained the approval of the authorities concerned in India to their applying for an extension of leave.

9 An officer who is at home on combined leave may be permitted to commence a course of study before the end of his privilege leave and to draw for such period the lodging allowance admissible under Rule 10, without forfeiting his privilege leave allowances during such period. For all purposes of record and subsequent calculation of leave, the full amount of Study Leave taken shall in such cases be postdated as if it commenced at the end of the Privilege Leave.

10 For the course of study, lodging allowance at the rate of 4s a day for a field officer, 6s for a Captain, and 4s for a Lieutenant will be granted on the production of the certificates required by Rule 12. It is to be understood that in order to qualify for the grant of Study Leave or for the receipt of lodging allowance, a definite course of study at a recognised institution, which will occupy the time of the officer for five or six days a week, must be pursued. This allowance will not be admissible to an officer who retires from the service without returning to duty in India after a period of Study Leave. Lodging allowance will be admissible up to 14 days for any period of vacation.

11 The rate of pay admissible during Study Leave is as follows—

A To an officer taking Study Leave while under Military Leave Rules, the rate of furlough pay admissible to him under those rules.

B To an officer taking Study Leave while under Civil Leave Rules, the rate prescribed in Article 314 of the Civil Service Regulations for an officer on ordinary furlough, subject to the limits laid down in Article 314 (a).

12 On completion of a course of study a certificate on the proper form (which may be obtained from the India Office), together with any certificates of special study, should be forwarded to the Under Secretary of State, India Office, who will arrange for the transmission of copies of the documents to the Director General, Indian Medical Service. Officers may also be called upon to report themselves in person to the President of the Medical Board, India Office, on the conclusion of their course of study.

13 Study Leave will count as service for promotion and pension, but, except so far as it may be taken during privilege leave (See Rule 9), it will not count for furlough or any other leave. It will not affect any leave which may already be due to an officer, and will not be taken into account in reckoning the aggregate amount of furlough taken by an officer towards the maximum period of six years admissible under Article 299 of the Civil Service Regulations.

MAJOR F V O BEIT, I M S, made over, and Captain W S Neale, I M S, on transfer from the Sanitary Department, received, charge of the Civil Surgeony, Shwabo District, on the afternoon of the 19th August 1912.

CAPTAIN B CHURCHILL, R A M C, made over, and Major F V O Beit, I M S, received, charge of the Civil Surgeony, Meiktila District, on the afternoon of the 24th August 1912.

CAPTAIN W GILLITT, I M S, has been granted by His Majesty's Secretary of State for India study leave from the 10th January to the 10th July 1912.

THE services of Captain L Cook, I M S, viz, on the expiry of his leave, placed temporarily at the disposal of the Sanitary Commissioner of Bihar and Orissa.

CAPTAIN R D SAIDOL, M B, I M S, to officiate as Police Surgeon and Pathologist, General Hospital, Rangoon, in place of Captain H B Scott I M S, transferred.

CAPTAIN H B SCOTT, I M S, to officiate as Resident Medical Officer, General Hospital, Rangoon, in place of Captain S F Clump, I M S, proceeding on leave.

MAJOR W R BATTLE, I M S, an Agency Surgeon of the 2nd Class, is granted privilege leave for one month and 10 days, with effect from the 1st July 1912.

CAPTAIN E C TAYLOR I M S, an officiating Agency Surgeon of the 2nd Class, was deputed to the Bacteriological Class at Kasuli to undergo a course of training, with effect from the 4th May 1912.

MAJOR J A BLACK I M S, Chemical Examiner to the Government of the Punjab was granted privilege leave for two months from the 30th July 1912.

CAPTAIN W T FINLAYSON, I M S, Superintendent, Borstal Central Jail, Lahore, is granted leave for two years from the 23rd October 1912.

CAPTAIN S H LEF ABBOTT, I M S, assumed charge of the duties of the Superintendent of the Ferozepore District Jail on the 16th August 1912.

THE Honourable Lieutenant Colonel J Jackson, I M S, having withdrawn his candidature for election as a member of the Bombay Medical Council as required by rule, his name should be deleted from the list of persons nominated as candidates

CAPTAIN A M JUKES, I M S, is appointed, until further orders, to act as Deputy Sanitary Commissioner, Metropolitan Circle, with effect from the forenoon of the 13th July 1912

The following promotion is made, subject to His Majesty's approval —

Major to be Lieutenant Colonel
27th July 1912

Hubert Malins Earle

MAJOR E S PECK, I M S, proceeded on leave on a medical certificate on the 12th July 1912

MAJOR I G G SWAN, I M S, acts as a Civil Surgeon of the 1st Class, *vice* Major Peck, I M S, on leave

THE undermentioned officers have been granted by His Majesty's Secretary of State for India permission to return to duty —

NAME	Service	Appointment
Lieutenant Colonel C Muetggut, C I R	Indian Medical Service	Inspector General of Prisons, United Provinces
Major C B Pirill	Indian Medical Service	Superintendent, Central Prison

CIVIL ASSISTANT SURGEON RASIK BIHARI LAL attached to the sadai dispensary at Gonda, to hold civil medical charge of that district in addition to his other duties, *vice* Major R F Baird, I M S, deputed to Kasauli

THE Civil Surgeon or balmarch to hold visiting medical charge of the Gonda district, *vice* Major R F Baird, I M S, deputed to Kasauli

CIVIL ASSISTANT SURGEON BANKIM CHANDRA SANYAL attached to the sadai dispensary at Muttra, to hold civil medical charge of that district, in addition to his other duties, *vice* Lieutenant Colonel J G Hulbert, I M S, deputed to Kasauli

THE Civil Surgeon of Ahgauli to hold visiting medical charge of the Muttra district, *vice* Lieutenant Colonel J G Hulbert, I M S, deputed to Kasauli

CAPTAIN A CAMERON, I M S, officiating Superintendent of the central prison at Benares, to hold civil medical charge of that district in addition to his other duties, *vice* Lieutenant Colonel J M Crawford, I M S, deputed to Kasauli

CAPTAIN A F HAMILTON I M S, Assistant Civil Surgeon Poona, acted as Deputy Sanitary Commissioner, Central Registration District in addition to his own duties from the 5th to the 17th June 1912, both days inclusive

HIS Excellency the Governor in Council is pleased to make the following appointments —

MAJOR O C MUNSON F R C S (E) D P H (Edin and Glass), I M S, to act as Civil Surgeon Karachi and Deputy Sanitary Commissioner for the Sind Registration District, in addition to his own duties as Superintendent of Mithern, *vice* Lieutenant Colonel B B Grayfoot M D, I M S, pending further orders

Major T Jackson, M B, B Ch (R U I), I M S, to act as Deputy Sanitary Commissioner, Gujarat Registration District, in addition to his own duties, *vice* Major O C Munson, I M S, pending further orders

THE following notification by the Government of India, Department of Education (Sanitary), is republished —

The services of Captain T H Gloster, M B, I M S, an officer of the Bacteriological Department are placed temporarily at the disposal of the Government of Bombay

LIEUTENANT-COLONEL J M CADELL, I M S, on return from leave to Jhansi

CAPTAIN H W ILLIUS, I M S, officiating Civil Surgeon, from Jhansi to Rao Bareilly

THE following officers have been elected to be members of the Bombay Medical Council —

Major A Hooton, I M S,
Major T Jackson, I M S

CAPTAIN N E H SCOTT I M S, Residency Surgeon, Baghdad, is appointed temporarily to hold charge of the current duties of the office of Political Resident in Turkish Arabia and His Britannic Majesty's Consul General Baghdad, in addition to his own duties, with effect from the 1st September 1912, and until further orders

SENIOR SUB ASSISTANT SURGEON RAM NARAIN held charge of the current duties of the office of Residency Surgeon in Meera in addition to his own duties for the period from the 1st July to the 10th August 1912 and during the absence on privilege leave of Major W R Battye, I M S

THE King has been graciously pleased to give orders for the following appointment to the Distinguished Service Order, in recognition of the services of the undermentioned Officer in connection with the recent operations against the Abos on the North Eastern Frontier of India

To be Companions of the Distinguished Service Order, 112 —

Major James Davison, M D, I M S

LIEUTENANT COLONEL E R W C CARPOLI, I M S, is permitted to retire from August 25th 1912

COLONEL W A CORRIE, I M S, Assistant Director of Medical Services, 3rd (Lahore) Division, has been permitted to retire from August 25th, 1912

MAJOR D N ANDERSON, I M S, has been permitted to retire from the service with effect from September 1st, 1912

COLONEL R W S LYONS I M S, has been appointed Assistant Director of Medical Services 3rd (Lahore) Division, *vice* Colonel W A Corrie, I M S, retired

COLONEL R B ROE, I M S, has been appointed Assistant Director of Medical Services, Sind and Jullundur Brigades, *vice* Col R W S Lyons, I M S, transferred

COLONEL D V J D GRANT, I M S, has been appointed Assistant Director of Medical Services, Karachi Brigade, *vice* Colonel R B Roe, I M S

LIEUTENANT COLONEL O E L GILBERT, I M S, has been permitted to retire from the service with effect from September 21st, 1912, on a pension of £500 per annum

CAPTAIN D MUNRO, I M S, Officiating Civil Surgeon, Sorampore, is appointed to act as First Resident Surgeon, Presidency General Hospital, Calcutta, during the absence, on leave, of Captain H B Steen, I M S

CAPTAIN A H PROCTOR, I M S, Officiating Resident Surgeon, Medical College Hospital, Calcutta, is appointed to act as Civil Surgeon of the second class and is posted to Sorampore

CAPTAIN J D SANDS, I M S, Officiating Resident Physician, Medical College Hospital, Calcutta, is appointed to act as Resident Surgeon in that Hospital

CAPTAIN C A GODSON I M S, is, on return from leave, appointed to act as Resident Physician, Medical College Hospital Calcutta, during the absence, on deputation, of Major W V Coppinger, I M S

MAJOR E O THURSTON, I M S, Civil Surgeon, Bardwan, is allowed privilege leave for one month, with effect from the afternoon of September 2nd, 1912

LIEUTENANT COLONEL H S WOOD, I M S, Civil Surgeon, Rajshahi, is allowed privilege leave for fourteen days, with effect from October 28th, 1912

LIEUTENANT COLONEL R BIRD, C I B, M D, F R C S, I M S, Professor of Surgery, Medical College and Surgeon to the College Hospital Calcutta is allowed privilege leave for ten days, with effect from October 5th, 1912

SECOND CLASS MILITARY ASSISTANT SURGEON F H GLFSON, Apothecary Presidency General Hospital, is appointed to act as Civil Surgeon of the second class and is posted to Bardwan during the absence on leave, of Major E O Thurston, I M S, or until further orders

MAJOR PULTENALY CHARLES GABBETT, I M S, is permitted to retire from August 25th, 1912

INDIAN MEDICAL SERVICE

Captains to be Majors

Dated 29th July 1912

Charles William Francis Melville, M B, F R C S F
Robert McCarrison M D
James Masson, M B, F R C S E
William Morris Anderson, M D
William Hugh Leonard
Andrew Watson Cook Young, M B
James Graham Goodenough Swan, M P
Robert Basil Boothby Foster, M B

Lieutenant to be Captain

Dated 4th June 1912

Sureswar Sirkar

CAPTAIN R H BOTT M B, F R C S, I M S, is appointed to officiate as Professor of Anatomy, Medical College Lahore, during the absence, on leave of Captain H H Bloome, M B, I M S, on until further orders

LIEUTENANT COLONEL CLARENCE EDWIN LLOYD GILBERT, Indian Medical Service Bengal, has been permitted by the Most Hon'ble the Secretary of State for India to retire from the service subject to His Majesty's approval with effect from the 21st September, 1912

THE services of Captain W S J Shaw, M B, I M S, are placed at the disposal of the Government of Bombay

INDIAN MEDICAL SERVICE

Captain to be Major

Dated 28th December 1911

James Charles Stewart Oxley, F R C S F

Lieutenant to be Captain

Dated 31st January 1912

Berkeley Gale, M P

In the Home Department Notification No 370 (Port Blair) dated the 6th August 1912, regarding the appointment of Captain J H Murray, I M S, to be Superintendent of the Cellular and Female Jails and Civil Surgeon, Port Blair for "till the 20th September 1912" read "till the 8th October 1912"

INDIAN MEDICAL SERVICE

Captains to be Majors

Dated 28th June 1912

William Lapsley, M B
Alfred Spitteler M B
George Joseph Grafton Young M B
James Good, M B
William Gavin Hamilton

Lieutenant to be Captain

Dated 30th January 1912

Harold Holmes King, M B

THE King has approved of the admission of the undermentioned gentlemen to the Indian Medical Service as Lieutenants on probation —

Dated 27th July 1912

John Dykes Wilson M B
Lawrence Alfiey Pelham Anderson
William Calder Paton, M B
James Bennett Hance, M P
Stephen Gordon
Graham Yalden Thomson, M B
Harold Kirkby Rowntree, M B
Basil Franklin Emtson, M B
Anthony Kennedy, M P
Jordan Constantine John, M B
Sorab Dhunjabhai Ratnaraju
Colin McIvor

THE King has approved of the confirmation of the commissions of the following Lieutenants on probation of the Indian Medical Service, with effect from the 27th January 1912 —

Ronald Herbert Candy, M B
Philip John Veale M B
Jamsaji Cursetti Bharncha
Henry Hingston M B
Heerajee Jehangir Manockjee Cursettee, M P
Frederick Jasper Anderson
Peter Fleming Gow, M B
John Simson Stuart Martin, M B

Robert Victor Morrison, M P

Jogesh Chandra Dey, M B

James Walker Jones, M B

James Hall Hislop, M P

NOTE—The name of Lieutenant George Blenkhorn Hulind, M B, I M S, is as now stated, and not as in the London Gazette of the 20th February 1912

THE services of Captain A W C Young, M B, I M S, are placed temporarily at the disposal of the Government of the Punjab for employment as Health Officer of Delhi

THE services of Captain T H Gloster, M B, I M S, an officer of the Bacteriological Department, are placed temporarily at the disposal of the Government of Bombay

MAJOR E L WARD I M S, Medical and Sanitary Adviser to the Director of Temporary Works Delhi, has been granted combined leave for twelve months (privilege leave for three months and furlough for the remaining period), with effect from the 10th June 1912

THE services of Major E L Ward, I M S, are replaced at the disposal of the Government of the Punjab with effect from the 10th September 1912

LIEUTENANT COLONEL J MORWOOD, I M S, Civil Surgeon Shahjahanpur, privilege leave for one month, with effect from the 18th September 1912 on the date of relief

MAJOR W E McKECHNIE, I M S, Civil Surgeon, Etawah, privilege leave for one month, from the 11th September 1912, on the date of relief

LIEUTENANT COLONEL W B LAKE, I M S, Inspector General of Prisons, Central Provinces, who was granted combined leave by Order No 940, dated the 16th May 1911, has been granted, by His Majesty's Secretary of State for India, study leave from the 3rd October 1911 to the 25th June 1912

HIS Excellency the Governor in Council is pleased to appoint Captain T H Gloster, M B, D P R, I M S, to act as Assistant to the Director, Bombay Bacteriological Laboratory, vice Captain J Morrison, I M S, on special duty

THE King has approved of the retirement of Major Hubert Mahns Earle, Indian Medical Service, dated 27th July 1912

CAPTAIN R D SAIGOL, I M S, on transfer from Toungoo, assumed charge of the duties of the Police Surgeon and Pathologist, General Hospital, Rangoon, on the forenoon of the 1st September 1912

CAPTAIN A T PRIDHAM, I M S, whose services have been placed at the disposal of this Department having reported himself for duty on the afternoon of the 4th September 1912, is posted to the Rangoon Central Jail for training

CAPTAIN A T PRIDHAM, I M S, reported himself for training at the Rangoon Central Jail on the afternoon of the 4th September 1912

CAPTAIN H R NUTT, I M S, Officiating Civil Surgeon of Azamgarh, privilege leave, combined with furlough, for a total period of one year, from the 16th September 1912

MAJOR C C MURISON, I M S, and LIEUTENANT COLONEL T JACKSON, I M S, respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner, Gujarat Registration District, on 4th September 1912 after office hours

ON relief by Captain J M A Macmillan, M A, M B, F R C S, Ch B, F R C S, M R C S, L R C P, I M S, on return from privilege leave, 1st grade Civil Assistant Surgeon Bipin Bihari Gupta, Officiating Civil Surgeon Hoshangabad, is reposted to the Main Dispensary, Hoshangabad

MAJOR W H KENRICK, L R C P, M R C S, I M S, Civil Surgeon has been granted, by His Majesty's Secretary of State for India, furlough for four months in extension of the combined leave granted him by Order No 1893, dated the 27th October 1911

ON relief by Major J C S Oxley, F R C S E, M R C S, L R C P, I M S, Captain F P Wernicke M P, I M S, Officiating Civil Surgeon Chanda, is transferred to Nagpur and is placed on general duty

CAPTAIN F P WERNICKE, M B, I M S, on general duty at Nagpur, is appointed to officiate as Civil Surgeon, Hoshangabad

UNDER Section 6 of the Prisons Act, 1891 the Chief Commissioner is pleased to appoint Captain F P Weiricke, M.B., I.M.S., Officiating Civil Surgeon, Hoshingabad, to the executive and medical charge of the Hoshingabad District Jail.

ON relief by Captain F P Weiricke, M.B., I.M.S., Captain J M A MacMillan, M.B., F.R.C.S., M.R.C.S., L.R.C.I., I.M.S., Civil Surgeon, Hoshingabad, is transferred temporarily to Jabulpur.

LIEUTENANT COLONEL E C HART, I.M.S., Sanitary Commissioner of Bihar and Orissa, is allowed leave for two months and four days under Article 260 of the Civil Service Regulations, with effect from the 23rd October 1912.

CAPTAIN I M MACRAE, I.M.S., Superintendent, central prison, Lucknow, on being relieved from Lucknow to Agra.

CAPTAIN W C ROSS, I.M.S., Deputy Sanitary Commissioner of Bihar and Orissa is appointed to officiate as Sanitary Commissioner of Bihar and Orissa in addition to his own duties, during the absence on leave of Lieutenant Colonel E C Hart, or until further orders.

THE undermentioned officers are placed on special duty under the orders of the Director General, Indian Medical Service —

Major W G Liston, M.D., I.M.S.
Major E D W Greig, M.B., I.M.S.
Captain J O G Kunhardt, I.M.S.
Captain F P Mackie, M.D., F.R.C.S., I.M.S.
Captain E N White, M.D., I.M.S.
Captain J Taylor, M.B., I.M.S.

THE services of Captain A W Howlett, I.M.S., Officiating Superintendent, central prison, Agra, are, on being relieved, replaced at the disposal of the Government of India, Home Department.

THE services of Captain R A Needham, M.B., I.M.S., are placed temporarily at the disposal of His Excellency the Commander in Chief in India.

MAJOR E L WARD, I.M.S., Medical and Sanitary Adviser to the Director of Temporary Works, Delhi has been granted combined leave for 12 months (privilege leave for three months and furlough for the remaining period) with effect from the 10th June 1912.

THE services of Major E L Ward, I.M.S., are replaced at the disposal of the Government of the Punjab, with effect from the 10th September 1912.

THE services of Captain W S J Shaw, M.I., I.M.S., are placed at the disposal of the Government of Bombay.

THE services of Lieutenant Colonel B B Grayfoot, M.D., I.M.S., are placed permanently at the disposal of the Government of India from the 8th September 1912.

MAJOR A A GIBBS, I.M.S., Medical Store keeper to Government, Lahore Cantonment, is granted privilege leave for 31 days, with effect from the 1st September 1912.

LIEUTENANT COLONEL EDWARD RICHARD WILLIAM CHARLES CARROLL, I.M.S., Bengal, has been permitted by the Most Honble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 25th August 1912.

THE services of Major W H Cox, D.S.O., I.M.S., are placed at the disposal of the Government of Burma.

MAJOR C B PRALL, I.M.S., Superintendent, central prison, on return from leave, to Lucknow.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "*The Indian Medical Gazette*," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED —

The Diseases of Children Pfander and Schlossmann Translated by H L K Shaw, M.D., and L La Fètra, M.D., with an Introduction by L E Holt. In five Volumes. Vol V J B Lippincott Co, Philadelphia and London, 1912 Price 2/.

Scientific Memoirs No 51 Government of India A Strepptothrix isolated from the spleen of a Lepus By Major W G Liston, I.M.S. and Capt J S B Williams, I.M.S.

Scientific Memoirs No 52 Government of India Dysentery in Hazaribagh Central Jail By Capt R I Wells, I.M.S. 1912

Scientific Memoirs No 53 Government of India The Development of the Parasite of Kala Azar By Capt W S Patton, I.M.S. 1912

Aids to Tropical Hygiene By Major R J Blackham, R.A.M.C. Messrs Baillière, Tinnall & Cox, London, 1912 Price 3/.

The Clinical Pathology of Syphilis and Parasyphilis By H W Baily, M.A., M.R.C.S. Messrs Baillière, Tinnall & Cox 1912 Price 5/.

Scientific Memoirs No 57 The Physiological Action of Certain Drugs in Tablet form By Major H M MacKenzie, I.M.S. 1912

Physiology of the Central Nervous System and Special Senses By N J Vaziridar 2nd Edition, revised and enlarged Price 8/.

Report on sanitation in Bengal for the year 1911 By Major W W Clemesha, I.M.S. Messrs James & sons, Bombay

Annual Statistical Return and short Notes on Vaccination in Bengal, 1911 By Major W W Clemesha, I.M.S.

Insomnia Its Causes and Treatment By Sir J Sawyer, M.D. 2nd Edition, Revised Messrs Cornish Bros, Birmingham, 1912

A Clinical Manual of the Malformations and Congenital Diseases of the Larynx By Prof Dr R Brannstrom Translated and annotated by G Muecke, M.D., I.M.C.P., F.R.C.S. Illustrated Messrs J & A Churchill, 1912 Price 10/.

An Historical Outline of Ambulance from the Earliest Times By U H Miles, I.M.C.P. Messrs John Wright & Sons, Ltd, Bristol, 1912 Price 3d.

Report of the Medical Commission for the investigation of Acute Respiratory Diseases in the Department of Health of the City of New York Part I Studies on the Pneumococcus Reprinted from the Journal of Experimental Medicine, 1905

The Administration Report of the Nagpur Municipality, 1911-12

Annual Sanitary Report of Eastern Bengal and Assam, 1911 By Lt.-Col J C Hare, I.M.S.

Vaccination Returns for the Province of Assam, 1911-12 By Col R N Campbell, C.B., O.I.E., I.M.S.

The Treatment of Diseases of the Skin By W H Stibbey, M.D., Ed Arnold, 1912

Internal Secretion and the Ductless Glands By Swale Vincent, M.D., Preface by Prof A E Schaffer, I.M.S. Ed Arnold, 1912

Annual Report of the Government Cinchona Plantations and Factory in Bengal 1911-12

Annual Report of the Hospitals and Dispensaries in Bengal, 1911, with Notes

Annual Report of the Administration of the Salt Department in Bengal, 1911-12

Annual Report of the Lunatic Asylums in the Madras Presidency, 1908-11

Annual Report of the Pasteur Institute of Southern India, Coonoor, 1912

Tropical Medicine and Hygiene By C W Daniels, M.B. Part III Diseases due to Bacteria and other Vegetable Parasites, to Diarrhetic Disorders and of Unknown Causation Messrs John Bale, Sons and Danielsson, Ltd, London, 1912

Collected papers by the staff of St. Mary's Hospital, Mayo Clinic Rochester Messrs W B Saunders & Co, Philadelphia and London, 1912

The Surgical Clinics of John B Murphy, M.D., Chicago Messrs W B Saunders Co 1912

Text Book of Pathology By George Adam, M.A., M.D., I.M.S. and John McEneaney, M.D., M.R.C.P. Illustrated 304 Engravings and 11 Coloured Plates Messrs Macmillan & Co, Ltd, London, 1912

General Report on the Health of British Troops in India during 1911

General Report on the Army Headquarters, Indian, Medical Branch By Col R H Firth, R.A.M.C.

Consumption Its Cause and Prevention By Dr T F Pedley, Rangoon Especially written for the Burmese

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM:—

1st Col B Seton, I.M.S., Simla, Asst Surgn B C Sea Gupta, Jorhat, Assam Major A B Fry, I.M.S., Calcutta, Major L Rogers, I.M.S., Calcutta Asst Surgn J D Davis, Calcutta, The Secretary, Dr Genl, I.M.S., Simla, Capt N Kendrick, I.M.S., Simla Major E O Thurston, I.M.S. Burdwan Lt Col D G Crawford, I.M.S. Lomou, Dr H T Lechmere Taylor, Punjab (Catalpa), Fattah Capt. Phypson, I.M.S., Samana Major R Steen, I.M.S., Belandshahr, U.P., Asst Surgn A J Dholakia, Rampur Dist, U.P., Capt G Rees Mogg, A.V.C., India N I Vaziridar, Girgaon, Bombay, Asst Surgn Bhupwar Lal Sharma, Rajakhera, Dr Dan McKenzie London, Messrs W B Saunders Co London Maj R W B Hammon, Junior, United Service Club, London, Dr M Mithrapala, Civil Surgn, Hingoli, Capt R S Kennedy, I.M.S., Alipur, Calcutta, Capt A F Hamilton, I.M.S., Coonoor, Lt Col W J Buchanan, I.M.S., Portsalon Co, Donegal, Messrs Baillière Tinnall & Cox London E Brunette, Esq., Calcutta, Major Clayton Lane, I.M.S., Berhampore, Dr Valcutt, Darrang, Assam, Dr I F Pedley, Rangoon, Burma Capt F Hefferman, I.M.S., Madras Capt F C Fraser, I.M.S., Kent, England Sub Asst Surgn Sathias Ganguli Barrackpore, Sub Asst-Surgn M Muhammad Beg, Brifaud, Persia

Original Articles.

SURGERY AT THE DAVID SASSOON HOSPITAL, POONA

BY A F HAMILTON, M B F R C S

CAPTAIN, I M S

THE following notes on the surgical work done at the David Sassoon Hospital may be of interest to readers of the *Indian Medical Gazette* as illustrating the type of work done in this part of India, for purposes of comparison with that in other districts and with surgery in England

As will be seen from the appended list, the

is responsible for sterilisation of all instruments, ligatures, dressings, etc., and who assists at all operations—one chief assistant, and one or more assistants chosen from the students of the B J Medical School. Every fortnight four fresh students are taken, in order to give all a chance of learning some practical surgery. This plan may be sound from a teaching point of view, but is certainly not good from an aseptic standpoint, as students differ in their ideas of surgical cleanliness, and, moreover, the constant change of helpers makes it a little trying for the surgeon. There is one anaesthetist, a sub-assistant surgeon, who from the large number of anaesthetics that he is called upon to give, soon becomes an expert, and relieves the surgeon of any anxieties on the part of the anaesthesia. The menial staff consists of two theatre "boys" who do the

LIST OF OPERATIONS

Abscess	140	Cellulitis	8
Litholapaxies	113	Mucoceles	3
Amputation of Limbs	80	Fibroid Polypi of the Uterus	3
Laparotomies	73	Exploration of Joints	3
Innocent Tumours	49	Varicose Veins	3
Radical Operation—Hernia	48	Suturing Lacerated Wounds	6
Cataracts and Needlings	46	Samisch's Section of Cornea	3
Necrosis of Bones	43	Trephining Skull	3
Fistula in Ano	32	Amputation of Penis	3
Tuberculous Glands	30	Removal of Upper Jaw	3
Radical cure—Hydroceles	29	Plastic Operation on Nose	3
Operation for Sinuses	27	Castration	3
Hæmorrhoids	25	Colporrhaphy	2
Curétage Uteri	23	Removal of Enlarged Bursæ	2
Incomplete Abortions	21	Ligature of Main Arteries	2
Enucleation of Eyeball	20	Prostatectomy	2
Liver Abscesses	19	Removal Foreign bodies	2
Malignant Tumours	16	Removal Foreign Pterygium	2
Extravasation of Urine	15	Wiring Patella	2
Amputation of Breast	15	Cauterization Corneal Ulcer	2
Mastoidectomy	9	Imperforate Hymen	2
Dilatation of Urethra	8	Rhinoplasty	2
Perineal Litholapaxy	7	Nephrotomy	2
Plastic Operation on Urethra	7	Iridectomy for Glaucoma	3
Tenotomies	7	Operation for Rectal Stricture	2
Decapitations and Operations for obstructed Labour	6	Laryngotomy	2
Tracheotomy	6	Hare Lip	1
Suprapubic Cystotomy	6	Plastic Operation on Scrotum	1
Compound Fractures	6	Neurectomy	1
Urethral Calculi	5	Excision Elbow Joint	1
Empyema Thoracis	5	Trachoma	1
Contractions of Fasciæ	5	Excision of Head of Humerus	1
Stricture Urethra	5	Imperforate Anus	1
Circumcision	4	Urethro Vaginal Fistula	1
Inguinal Buboës	4	Rectopexy	1
Perinorrhaphy	4	External Urethrotomy	1
Tonsillotomy	4	Laminectomy	1
Osteotomy	4		
		TOTAL	1,048

work is of a varied nature—something of the "mixed bag" type. The Deccan is not a "stone" or "eye" district in any way comparable to other areas, e.g., Hyderabad or the Punjab—hence the number of operations on bladder and eye is small compared with those in the select areas, but even still the number of cases is sufficient to offer one a fair amount of practice in that class of surgery.

A word may not be out of place as regards the surgical arrangements of the hospital.

The operating theatre is an old one, with no separate annexes for anaesthetist, sterilising, etc. Everything has to be done in the theatre itself—a condition of affairs which leads to inconvenient crowding. The staff consists—in addition to the surgeon—of one theatre nurse, who

cleaning up, carrying patients, and other minor duties.

Chemical antiseptics are freely used—a rigid aseptic ritual being almost impossible when the assistants are constantly changing. The antiseptics used are 1 in 2,000 Biniodide, and 1 in 500 spirit Biniodide for the hands—1 in 60 Carbolic solution for the instruments.

The Iodine method of skin sterilisation is used universally except in those regions of the body where it is inadvisable or not suitable. The silk and silkwool ligatures are boiled—the catgut ones are sterilised by the Iodine-Formalin method.

The dressings, gowns, towels, etc., are sterilised in a steam steriliser placed in one corner of the theatre.

Rubber gloves are not habitually used—while freely admitting the advisability of adopting them, the large number of pairs that would be required annually owing to the presence of students with the different sizes and shapes of hands makes the expense at present too great.

In the Jacob Sassoon Hospital they are used as a routine measure.

A list of operations that have been performed is given on the preceding page on in-patients in the David Sassoon Hospital during the past two years, *i.e.*, from June 1910 to June 1912—concomitant on some of the more interesting cases are subjoined.

Operations for Abscesses—The majority of tuberculous nature—there is very little of interest to note here, as may be expected the number easily heads the list. In the majority of cases, free incision with gauze drainage and packing formed the treatment. In a few selected ones, incision, evacuation of contents and closure without drainage was the procedure adopted. In two instances the abscess cavity slowly refilled and required a second operation with apparent cure. In one case—a psoas abscess—jection of bismuth paste was tried, but was not successful, probably owing to errors in my technique.

Litholapaxies—These come second on the list, numbering 113 with 5 deaths. Only one case occurred in a female. Two of the fatal cases occurred in small children, in whom the stone practically entirely filled the bladder—further experience has taught me that in these cases immediate supra-pubic cystotomy is the best treatment. Another death occurred in a young man with an encysted calculus. I crushed the portion which projected into the bladder cavity with much difficulty, leaving the fixed portion to be dealt with later. The patient died four days after, and *post-mortem* examination showed that the calculus had ulcerated through the bladder wall into the peritoneal cavity with extravasation of septic urine and peritonitis. I much regret that I did not perform a supra-pubic operation at the outset—the stone was so firmly gripped by the bladder wall that it had to be cut out—and on the surface is a deep groove showing the impression of it. The weight of this (the smaller portion) of the stone was $1\frac{1}{2}$ oz.

Another death occurred in the case of a very old man—in whose bladder were two very hard stones completely filling the cavity—an attempt was made to crush with the giant lithotrite (No. 14 Arnold) resulting in bending and jamming of the male blade—supra-pubic cystotomy was necessary to extract the stones and release the blades—the two stones weighed $4\frac{3}{4}$ oz., and are the hardest I have come across. The patient did well for a few days but died with marked uræmic symptoms. I believe his kidney must have been disorganised—I have no doubt that a supra-pubic cystotomy should

have been performed as soon as the state of affairs in the bladder was realised—as much time was spent in trying to disimpact the impacted blades. One profits by such experiences. Seven perineal litholapaxies were performed by the central (Hyderabad) incision, but they call for no particular comment. The type of case in which the operation is called for is in children with calculi just too big for a lithotrite introduced through the urethra in the ordinary way.

The advice given by Surgeon-General Stevenson, I.M.S., “never to leave the track into the bladder without a probe or some guide into it,” is invaluable, and is really the crux of the operation.

Amputations—Eighty in number. It is difficult to arouse much interest in this type of surgery, yet it looms large in the practice of this country, owing to the absolute carelessness of the native in dealing with machinery. The proximity of a number of mills and a large railway station accounts for the majority of the casualties. Many patients are brought in with their hands crushed to pulp in sugar-cane presses, necessitating amputation through the forearm. Out of the 80 amputations for extremities there were 6 deaths. One or two of the cases merit a passing word.

There was one amputation through the hip joint, in a case of railway smash when the entire limb was disorganised and crushed almost beyond recognition. The operation was performed immediately on admission—no flaps were obtainable owing to loss of skin extending above Poupert's ligament. Contrary to one's most sanguine expectations the patient recovered and nature fashioned most excellent flaps by granulations with subsequent epithelial overgrowth. Three amputations through the shoulder joint were performed, all recovered. In one, an old man, there was a fracture dislocation of the humerus of eight days' duration—on admission the limb was cold and no radial pulse could be detected. Excision of the displaced head was first performed in the hopes of relieving pressure on the axillary vessels, but it was of no avail—the limb became gangrenous necessitating a subsequent amputation.

Of the other two cases, both in small boys, one was the result of a railway smash. The other of an old compound fracture of the humerus with rapidly spreading gangrene.

Of the fatal cases one was for amputation through the thigh for a compound fracture of the femur in which a most virulent traumatic spreading gangrene had set in—the patient died of septicæmia 24 hours after operation. I believe the death was avoidable had I realised the intensely virulent nature of the infection earlier. A second case occurred in a similar manner from acute septicæmia, the result of a crushed foot in a railway accident. I am firmly convinced now that one must operate high above the seat of injury in these badly crushed limbs.

as the vitality of the tissues for several inches above the crush seems to be too low for union I have twice been obliged to reamputate higher up owing to making this mistake

Another fatality was in an advanced diabetic whose thigh was amputated for moist spreading gangrene. The patient never fully recovered from the anæsthesia (chloroform) and died of diabetic coma. Two cases died of tetanus on the second day after operation, the infection having occurred 4 days previous to admission.

One case was of interest as necessitating a triple amputation, one leg, one forearm and a "Syme" of the other foot. Being short-handed for assistance, I was obliged to perform all three one after the other as quickly as possible. The patient recovered, a poor crippled being.

Laparotomies—This much more interesting branch of surgery comes fourth in numerical order. The 73 cases comprise the following—

Operation for Female Pelvic Tumours	28
Exploratory Operations	13
Intestinal Obstruction	15
General Septic Peritonitis	6
Perforation of Enteric Ulcer	3
Epiplolexy	2
Tuberculous Peritonitis	2
Tuberculous disease of the Cæcum	1
Protruded Intestines	2
Appendicectomy	1
	73

To turn to details of some of the above

Of the 28 cases for female pelvic tumours, fourteen were ovariectomies, seven multilocular cysts, four broad ligament cysts, three dermoids. There were no deaths in this series. The youngest patient was 12 years of age with a large dermoid. The oldest 60 years. In three cases there were extensive adhesion to surrounding organs necessitating a tedious and prolonged dissection. In every case an effort was made to remove the cyst entire without tapping—in one case only was a preliminary tapping performed for a very large cystic tumour extending up to midway between umbilicus and ensiform, but the incision was only 4 inches long owing to the ease in removing the tumour after evacuation of the contents.

Three of the cases proved to be malignant papillomatous cysts, one occurring in a girl aged 13 years, this one proved inoperable. Two of the dermoids had twisted pedicles with commencing necrosis of the wall of the cyst. One dermoid was of interest in that in addition to the usual pultaceous contents there were several loose teeth and an almost complete lower jaw with three teeth embedded in the wall of the cyst.

Extra-uterine Gestation—Five operations were performed for rupture of an extra-uterine gestation sac—with 3 recoveries and 2 deaths—one death was due to intestinal paralysis, the bowels having been obstructed for 8 days prior to

operation—no cause could be ascertained for the other death, as *post-mortem* examination showed that everything in the pelvis was right—the woman had symptoms of secondary hæmorrhage, but the pelvis was dry and the pedicle firmly occluded. In one case an error in diagnosis was made, the condition being mistaken for impaction of a retroverted gravid uterus, although every effort was made to differentiate the two conditions.

Salpingectomy—Four operations, all recovered.

Hystero-salpingectomy—One operation for fibroids and tubal disease—recovery.

Supra-vaginal Hysterectomy—Two operations for fibroids, both recovered.

Myomectomy—One operation for large fibroid growing between layers of the left broad lig—recovery.

Pelvic Hydatid.—This caused intestinal obstruction by pressure on the rectum—recovery.

Cæsarean Section—One operation at the seven month.

The condition was interesting as the woman was admitted for intestinal obstruction—the abdomen was enormously distended and practically all the small intestines had to be extruded to find the site of obstruction, which appeared to be an internal hernia into the foramen of Winslow. The gut was incised to evacuate a large quantity of liquid faeces—and a saturated solution of Mag Sulph (ozs 2) injected into the bowel. Owing to inability to replace the gravid uterus among the still rather distended intestines, Cæsarean Section was performed and twins (dead) were removed. The patient had four stools a few hours after the operation and made a complete recovery. I consider the injection of Mag Sulph to be a valuable agent in cases of extensive paralytic distension. Hypodermics of Eserine Sulphate gr 1/100 were administered 4 hourly until danger from distension was over.

Intestinal Obstruction—Fourteen operations.

This series forms melancholy reading as the mortality is enormous—such however is the experience of most surgeons out here and to a lesser extent in England. Most of the cases are admitted suffering from intense toxæmia with greatly distended abdomens. The cause of the obstruction can rarely be diagnosed before operation, and very often not even then owing to the extreme distension of the intestines and the serious condition of the patient prohibiting any prolonged measures.

Of the 14 cases there were 5 recoveries and 9 deaths.

Of the recoveries—one was a case of strangulation by internal band in a male aged 40 years. Another was due to multiple adhesions of tuberculous origin in a young woman.

The third was due to internal hernia.

The fourth was caused by pressure by an enlarged uterus in a woman aged 72 years.

The fifth was a case of intussusception in a girl aged 6 years. This was a very satisfactory case.

The history was of 7 days' duration, and the apex of the intussusception was easily felt per rectum. The child's general condition was extremely bad. Fortunately no adhesions were present, and the intussusception was reduced without much difficulty. The little patient made an uninterrupted recovery.

Of the 9 deaths—one was due to volvulus of the intestines in a male aged 20 years.

Two were caused by internal hernia with extreme distension. Another was probably due to embolism of the mesenteric vessels.

Many feet of intestines were studded with hæmorrhagic spots and becoming completely paralysed.

In three cases the cause could not be ascertained, the distended gut being opened and emptied.

In the last case almost the whole of the small intestines were gangrenous. No *post-mortem* was allowed, and hence the cause remained unknown.

General Septic Peritonitis—Six cases, 2 recovered and 4 deaths. In only one case could the cause be ascertained. This patient, a female aged 30, recovered, although the prognosis seemed absolutely hopeless. On opening the abdomen the pelvis was found full of stinking pus, the right tube, ovary, and appendix were inextricably matted together forming a gangrenous mass, large patches of purulent lymph were scattered over the lower part of the abdomen and to the abdominal wall. My "chief," Lt-Col J. B. Smith, I.M.S., who gave me his valuable assistance and advice at several of the laparotomies, said "one might as well sew her up with a bootlace and send her back to bed at once." Certainly the horrible appearance of the patient's abdominal contents seemed to forbid any possible hopes of recovery—however the gangrenous mass was rapidly ligatured and removed—the pelvis swabbed out and free drainage by tubes and gauze provided for. The after-treatment consisted of "Fowler's position" with frequent rectal salines. The patient recovered completely, and her bowels acted naturally almost from the first day. The recovery was mainly due to the devoted and assiduous attention of the nursing staff. The tubes and gauze were not touched for 10 days, after that, the large wound was dressed daily and healed by granulation. I anticipate the woman will return some day with a large hernia. This case illustrates well how uncertain one's prognosis must be—cases die that seem to have a fair chance of recovery, and others, like the one just mentioned, recover when one would not give them a 1,000 to 1 chance. It has always been a mystery to me how that woman's bowels acted perfectly naturally, for everything in the abdominal cavity seemed to be glued and matted together in a hopeless mass.

Operation for Perforated Enteric Ulcer—Three in number, one recovery, two deaths.

This formidable complication of enteric fever having occurred three times in my practice makes me think that enteric fever in natives is not the mild disease that some observers consider it to be. The first case occurred in a young man aged 20 years brought into hospital in an almost moribund condition—abdomen extremely distended. The clinical picture was that of acute general septic peritonitis. The abdomen was opened through the right rectus muscle and found to be full of pus and extravasated intestinal contents, it was swabbed out—a second opening made to left of middle line and two drainage tubes inserted. The prognosis seemed to be hopeless, but the patient rallied, passed through a moderately severe attack of enteric fever and ultimately made a complete recovery. Fowler's position—copious rectal salines and constant nursing pulled him through.

The second case occurred a few weeks after the above in a girl 10 years of age—who was known to be suffering from enteric fever and in whom the diagnosis of perforation was made. Operation about 12 hours after symptoms—a large irregular opening in the ileum was sutured and abdomen cleansed as rapidly as possible. The prognosis in this case seemed fairly good, but the patient seemed overwhelmed with toxæmia and died 30 hours after the operation.

The third case (operated upon by Major Hooton, I.M.S., during my absence) occurred in a boy 8 years old, whose condition was desperately bad at time of operation. A perforated ulcer was found and sutured—but the patient never rallied and died 4 hours after operation.

The remaining abdominal operations do not call for any particular comment.

The solitary appendicectomy was performed during the "quiescent" period.

The *Epiplopleures* were performed for ascites with jaundice. My limited experience of them is unsatisfactory—the technique laid down by Rutherford Morrison was carefully followed out, but about a week to ten days after operation the patients became deeply jaundiced and—comatose—the condition resembling one of acute chloremia.

Operations for Hernia—Forty-eight in number of which 12 were for strangulation.

Of the total number 45 were inguinal, 3 umbilical hernia. There was no operation for femoral hernia. All the strangulated cases recovered—a radical cure was performed in each case, as fortunately the condition of the strangulated intestine was such as to permit of the further procedure being taken. In no case was resection needed.

There was one death in the total series—this occurred in an infant 15 months old who was operated on for a large inguinal hernia—the operation was a simple one, but four hours afterwards the patient's temperature suddenly rose to 105.6°—convulsions rapidly ensued and the

infant died before any measures could be taken for relief of the symptoms. When I arrived to see the patient, he was moribund, and the only physical sign I could elicit was enormous distension of the stomach. I am at a loss to know what the cause of death was, unless it could have been a case of "acute dilatation of the stomach."

For the inguinal hernias Bassini's operation was performed in every case. It being a straightforward, simple and apparently successful operation I was not inclined to substitute any of the various other methods. The youngest patient was an infant eight months old. A few of the cases presented interesting features. In one a strangulated case—several coils of intestine, the appendix and entire cæcum were in the scrotum (right side)—some difficulty was experienced in reducing the large mass.

In another case a portion of the bladder wall was found in the sac.

A third case was particularly interesting owing to a rather serious complication.

A male aged 40 years was admitted at 2 A.M. for strangulated right inguinal hernia.

The sac was opened in the usual manner, and contents which were deeply congested reduced. The general condition being satisfactory Bassini's radical method was proceeded with—on introducing one of the deep sutures through Poupart's ligament there was a copious gush of dark blood which "welled" up into the field of operation and was difficult to arrest. After several endeavours I managed to secure the bleeding vessel with two hæmostatic forceps deep down—as I was unable to place a ligature round the point, I closed the rest of the wound and left the forceps on. The skin incision was sutured except for one spot, where the forceps protruded, and were securely kept in place by bandages. Seventy-two hours later they were carefully removed and the aperture closed. No hæmorrhage took place, and the patient made an uneventful recovery. For some time I was puzzled to know what vessel I punctured at the time of the operation, the hæmorrhage was so free that I feared I might have punctured the common femoral vein, or possibly the deep epigastric vein—the bleeding was undoubtedly venous. Mr. Sohoni, the assistant demonstrator of anatomy, kindly made a careful dissection of the inguinal canal for me in a dissecting room subject and, I think, solved the question. The wounded vessel certainly was not the common femoral, nor the deep epigastric, for I was well to the inner side of both, but running along the free curved margin of Poupart's ligament is a vein passing outwards to open into the deep epigastric vein. I was previously unaware of the existence of this vessel, which in the particular instance I am referring to was of considerable size. I have little doubt that it was thus tributary of the deep epigastric, possibly engorged by the congestion of the parts,

that I punctured. The accident was an untoward one, and occurring at 2 A.M. in the morning, with a rather defective over-head light and with very limited assistance, was not easy to deal with. The result would seem to show that the procedure adopted, though possibly rather unsurgical, was the best under the circumstances. In another strangulated case, a piece of omentum weighing $1\frac{1}{2}$ lbs. was gangrenous and had to be removed, no untoward symptoms resulted. This is just the type of case in which one may expect "fat-necrosis" to take place, with its alarming train of symptoms so well described by Sir W. Bennett in a clinical lecture published several years ago. One of the herniæ was complicated by an undescended testicle, distending the inguinal canal, the organ was removed.

Operations for Innocent Tumours—Forty-nine in number. These form a nice, clean type of surgery, almost every variety of pathological growth being met with—the cases all did well, uniting by first intention.

Operations for Cataract—Including needling for juvenile cataract. Forty-six in number. This small series calls for no comment. My experience in cataract work being very small, I have not felt justified in attempting Smith's intracapsular operation.

Operations for Liver Abscess—Nineteen. The majority of these were advanced cases with large abscess cavities. There were 4 deaths and a fifth case removed from hospital, who must certainly have died outside. In nearly all the cases the usual operation of resecting a rib with evacuation and drainage of abscess cavity was performed. Two abscesses were opened below the costal arch through the right rectus muscle. Ipecacuanha was given in moderate doses during convalescence. One case was unusual in that the abscess pointed at the angle of the scapula behind and closely resembled an empyema—in fact, it was only by evacuation of liver abscess pus that the diagnosis became certain.

Amputation of the Breast—For Carcinoma 15. All these cases were very advanced, a large fungating ulcerated growth on the skin being present in the majority of cases. It seems as if the native female invariably waits till the tumour has ulcerated through the skin—in some of the cases maggots were present and the whole breast was in a septic condition. In no branch of surgery, with the exception possibly of intestinal obstruction, do the words "too late" apply as strongly as to these breast cases. In one patient, the breast after removal weighed 16 lbs., it was of enormous size and sloughing in parts. It had to be supported by two assistants during the operation—all the above cases recovered.

Ligature of Main Arteries—Two classical operations were performed for aneurysm of the popliteal artery—with completely satisfactory results in both.

In the first case the diagnosis of popliteal aneurysm was evident—and the artery was tied at the apex of Scarpa's triangle

The second case was more complicated, as the patient had a soft, tender, pulsating swelling in the popliteal space, the skin being reddened and presenting all the signs of inflammation. The diagnosis lay between inflamed popliteal aneurysm and an abscess overlying the artery with transmitted pulsations. I confess I thought the latter diagnosis to be the correct one. Capt. Keyworth, R.M.S., very kindly operated, as I was *hors-de-combat* with a septic finger. The swelling was first explored with a needle and syringe and pure blood withdrawn—it was obvious that it was a case of inflamed and leaking aneurysm (the swelling had notably increased in size during the three days preceding the operation), the main vessel was then tied at the apex of Scarpa's triangle, and the pulsation in the swelling below immediately ceased—the patient made a speedy recovery from his dangerous condition. Seen several months later there was no recurrence of pulsation and only a firm "thickening" was noticeable in the popliteal space.

Supra-pubic Prostatectomy.—Two cases operated upon and both successful as far as immediate results, but the first case died 8 weeks after operation with symptoms of uræmia. *Post-mortem*—the bladder was small and walls greatly hypertrophied—ureters dilated and both kidneys quite disorganised. The second case died on the 27th day with typical symptoms of renal inadequacy. I hope in future to get cases earlier in the course of the disease. Both the above cases had suffered from acute retention of urine—the bladder being full of foul smelling septic urine.

Supra-pubic Cystotomy.—For calculus 6 cases, 4 recoveries, 2 deaths. The 4 recoveries were those not suitable for litholapaxy. The 2 deaths occurred in cases in whom litholapaxy had been attempted (as mentioned previously). The main difficulty in this operation is the after-treatment. I intend to try Colt's supra-pubic apparatus by which means the patient is kept drier and more comfortable. In one case, in a boy 8 years old, a perfect specimen of oxalate calculus, completely filling the bladder, was removed.

Trephining Skull.—For compound depressed fractures. Three cases, all recovered. One for a case of temporo-sphenoidal and cerebellar abscess following chronic otitis media—the former abscess was opened, the latter was discovered, only after death.

Wireing Patella.—Two cases, one for simple fractures, the other for compound comminuted fracture with the knee joint open. This case necessitated continuous irrigation for several days but eventually recovered, the silver wire was removed 8 months later as it worked its way through the skin.

Excision of the Upper Jaw.—Three cases 2 recoveries, one death, all advanced cases with growth ulcerating through palate into the mouth. In all, a preliminary laryngotomy was performed. This step greatly simplifies the main operation as the pharynx can be plugged and no blood finds its way down into the air passages. In one of the cases, a female, the cosmetic result was excellent. The fatal case died one hour after operation, presumably of shock.

Laminectomy.—One case in a boy aged 9 years who fractured his spine at the level of the 6th dorsal vertebra—the result of a wrestling bout. The operation was performed 3 weeks after the accident, the patient being admitted for complete paraplegia and with exaggerated knee jerks and well marked ankle clonus. As there was such a well marked deformity of the bony spine it was hoped that possibly some relief might be obtained by removal of pressure of the displaced bone. The spines and laminae of the 6th and 7th vertebrae were removed, but the cord appeared to be hopelessly crushed. The wound healed by first intention, but there was no perceptible improvement in the symptoms.

Neurectomy.—This solitary case is perhaps the most interesting of the series. The patient, a male, aged 30 years, admitted for intense occipital neuralgia. There was a history—several months previous—of a heavy bag of grain falling on the neck. It was evident, from the patient's appearance, that there had been a partial fracture dislocation of the highest part of the spine. The man could not rotate his head in the slightest, but his chief complaint was the intense neuralgia up the right side of his occipital region, the patient threatened to commit suicide owing to the unbearable nature of the pain. It seemed certain that the cause of the pain was pressure upon the occipital nerve, *z.e.*, the post primary division of the 2nd spinal nerve at its point of exit between the second and third vertebrae. The only description of the operation for resection of this nerve that I could find is in Jacobson's and Rowland's "*Operations of Surgery*," Vol 1, page 739, where the authors quote from Bergmann's "*System of Practical Surgery*."

A full and lucid account of the steps of the operation is given in the former book together with an admirable illustration. With the book and a skeleton in front of me I performed the operation and traced the nerve without much difficulty to where it turns round the inferior oblique muscle where it was resected, about 1" being removed. The dissection is not an easy one, as the wound is a deep one and there are several important structures in the immediate neighbourhood. No drainage was employed. The extensive wound healed by first intention. The functional result was excellent as the patient was entirely relieved of the symptoms. No effort was made to reduce the dislocation as the parts were firmly fixed by adhesions.

To any one who meets with a similar case, I recommend the book mentioned above where the text and illustrations are of great assistance in the surgery of what Mr Jacobson calls "this intricate region"

Space and the editor's indulgence forbid me mentioning any details of the other cases on the list. Enough has been said to show that the surgery of "the Deccan" is both varied and interesting.

A final word may be said with regard to (a) a comparison with surgery at home, (b) the results of Iodine sterilisation of the skin. In the first place what strikes one as the most marked contrast from English surgery is the total absence of any operation upon the biliary tract—not a single operation out of a total of 1,048 was performed for gall-stones. Surgeons at home have frequent occasions to operate for biliary affections. Why is it that the condition is so rare among the natives of India? Is it a question of diet, or habits, or climate or what? The elucidation of this curious fact would form an interesting research. Again the rarity of appendicitis is a striking feature. Does the native of India suffer from appendicitis? If so, how is it that he so rarely applies for surgical treatment. I am speaking solely from experience of one part of India, perhaps other surgeons out here may have a different tale to tell. On the other hand, "vesical calculi" and "hydroceles" form a striking landmark in the surgery of this country as compared with their incidence in Europe. Why does the native of this country so frequently suffer from stone in the urinary bladder and so rarely from stone in the kidney or gall-bladder?

Regarding the question of Iodine sterilisation of the skin, I published in the *Indian Medical Gazette* of October 1910 a short note upon this subject. A further experience of this method confirmed my previous opinion. In those cases where stitch suppuration occurred, there was no reason to suspect the patient's skin as the offending part, as when suppuration occurred, it was in the deep sutures—silk or catgut.

Out of a total number of 274 clean cases in which Iodine was used and the final result known 254 gave a perfect result, i.e., no trace of moisture. There were 16 cases of limited suppuration, i.e., a localised abscess containing a few drops of pus. In 4 cases there was extensive suppuration, i.e., the whole wound "broke down" and healing took place by the slow process of granulation. In conclusion I must thank those who have been associated with me in the surgical work of the past two years for their

untiring endeavours and unfailing assistance, more especially the sisters of my wards, nurse Goucher in charge of the operation theatre, Nurse Campbell for several months in charge of the female surgical ward, and Messrs J DeSouza and R V Mone who so efficiently gave chloroform for all the cases.

THE PRESENT POSITION OF THE PERMANGANATE TREATMENT OF SNAKE-BITE

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In the October number of the *Indian Medical Gazette* a resume appeared of the long awaited report of Surgeon-General Bannerman, I.M.S., on his experiments on the permanganate treatment of snake-bite. It is sincerely to be hoped that the publication of the full report will not be further delayed, as in such an important matter full details of the experiments are necessary to allow its weight, in relation to the very different conclusions arrived at by other workers, being estimated. For example, in the resumé it is stated that the experiments showed that "even four times the amount which serves to neutralise cobra venom in a test tube will not with certainty prevent fatal poisoning an animal which has received 10 minimal lethal doses, and that the same quantitative relations obtained when *daboria* venom was used." To those unacquainted with the details of the subject this may seem at first sight to be an argument of some importance against the likelihood of the permanganate method being of practical value, whereas it really affords the strongest evidence in its favour. Thus, in the case of the cobra, the full amount of venom obtainable from a fresh vigorous snake is just about ten lethal doses for a man. Yet by implication, four times its weight of permanganate did in some cases prevent fatal poisoning in animals by such a large dose of venom, although it is probable that this snake very rarely actually injects its full dose into the human subject, for reasons which will appear presently, while there is no practical difficulty or objection to applying very much larger quantities of permanganate than four times the weight of the venom, as the necrotic effect on the tissues, which was of course well known to previous workers, is nothing compared to the chance of saving a patient's life. In the case of the *daboria*, not much over one lethal dose for a man is ejected from freshly caught reptiles when allowed to strike, so that in

* [Appendicitis is far from unknown in natives of India, but compared with Europeans and Americans it is rare. We invite the opinions of Surgeons in India.—Ed.]

Note—The experiments in which the treatment was carried out immediately after the injection only have been omitted to simplify matters and as being of no practical value.

some of the Bombay cases nearly ten times as much venom as is likely to be received by a human being was successfully neutralised by the small amount of permanganate used in the animals referred to, so these experiments are extremely favourable to the treatment.

Next let us see whether the recently published experiments on dogs warrant the sweeping conclusion in the last sentence of the paper. For this purpose we may summarise the figures given in the October paper in a form which will be more intelligible to those who have not themselves worked at the subject.

TABLE SUMMARISING SURGEON-GENERAL
BANNERMAN'S RESULTS ON DOGS

Venom No	Lethal doses	Time before treatment	Died	Cured	Per cent cured
Cobra	1	5 to 30 minutes	6	11	65%
"	2	5	1	6	83%
"	3	5	3	3	50%
"	3	30	4	0	0%
Daboia	2	1	2	0	0%
"	2	2 to 5	3	3	50%
"	2	30	2	2	50%

In the first place, a curious discrepancy in the results will be observed, in that the *daboia* cases treated after one minute both died, while of those not treated until 2 to 30 minutes after the injection of the venom half recovered.

Secondly, when the figures are set out as in the above table it becomes clear that the results are highly satisfactory to the treatment, for with the exception of the discrepancy just noted, and also the failures when the treatment was not begun until 30 minutes after three lethal doses of cobra venom—an extremely severe test when it is remembered that in actual practice a ligature is practically invariably tied above the bite by Indians, which at once checks the absorption of the venom—the experiments show a uniform recovery rate of from 50 to 83 per cent. That is a considerable majority of the animals were saved from inevitable death—a success it would be difficult to find a parallel to in the whole range of medical science for any antidotal treatment against a very deadly poison injected subcutaneously. It is hardly necessary to point out that the other experiments mentioned, in which dogs were bitten by poisonous snakes, the doses received by them would be so far in excess of anything possible in adult human subjects, who form the vast majority of cases in India, that they are of no practical value whatever.

Stress is also laid on the fact that the experimental injections of venoms were made just under the skin, while under natural conditions it is stated the snake's fangs penetrate much more deeply, adding considerably to the difficulty of treatment. This is only true in the exceptional

cases in which a *daboia*, or possibly an *echis carinata*, which have much longer fangs than the minute ones of colubrine snakes, happens to strike a fleshy part. As a matter of fact, I have already recorded that in three-fourths of a considerable series of cases of snake-bite of which I have records, the bite was inflicted on the hand or foot, nearly invariably on a finger, the dorsum of the foot or the ankle, where there is no material depth of tissue, a very essential point which makes the treatment easy to carry out efficiently in the human subject in the great majority of cases, and which also makes it very difficult for the snake to inject its full quantity of venom, for the orifice of escape is not at the tip of the fang, but a little way up on the anterior surface. Moreover, I have a record of a patient bitten by a *daboia* in three places on the fleshy part of the upper arm, making six punctures, who was successfully treated with Sir Lauder Brunton's snake lancet by a layman situated very many miles from any medical help, so even such rare cases are by no means hopeless.

In face of the summary of Surgeon-General Bannerman's experiments on dogs given in the above table I was much astonished to read his conclusion that "As a practical measure for employment after actual snake-bite it appears to be of no practical value whatever." Even if this statement were justified by the records so far published, which I entirely fail to see, it would require the very important qualification "—of no use whatever—IN DOGS," for my experiments of 1903 clearly showed that the method was signally successful in cats. As a matter of fact dogs are very unsuitable animals for these experiments, for it is well known that they absorb cobra venom with extraordinary rapidity, as is clearly shown by Fayrer's classical experiment in which the tail of a dog bitten by a cobra was cut off inside the bite a few seconds after, yet the animal died from the venom absorbed in that short time.

If, however, the cure of only from 50 to 83 per cent of Surgeon-General Bannerman's dogs (with the exclusions already detailed) are to be considered even to prove that the method is of no use in those animals, then in view of my greater success with cats the question resolves itself into one as to whether it will be found to be of value in man, which must ultimately be decided by actual experience. For a number of years past I have done my best to collect trustworthy evidence of undoubted bites by poisonous snakes, and at the Bombay Medical Congress I summarised all the results which had been reported to me by competent men, mostly Indian Medical Service Officers, in a table which is worth quoting here as it will probably have been seen by few.

TABLE OF CASES OF AUTHENTICATED BITES BY POISONOUS SNAKES TREATED BY PERMANGANATE OF POTASH BY SIR LAUDER BRUNTON'S METHOD

Snake	Cases	Recovered	Died	Total
Cobras	12	11	1	
Kraits	3	3		
Daboia	4	4		
Other vipers	1	1		
Pit viper	1	1		
TOTAL	21	20	1	

It will be observed that the table includes a number of cases of bites by the commonest deadly snakes of India, namely, cobras, kraits and daboias (Russell's Viper), while I have also been informed of a cure of the bite of an *Echis carinata*, which is not included as I have not full details of it. I particularly asked that all fatal as well as successful cases should be reported to me, but after liberal allowance for the possibility that recoveries are more likely to be sent than failures, still the fact that 20 out of 21 consecutive recoveries in cases in which the snake biting the patient was identified—for only such are included in my table, and I have numerous other reported successes—furnishes conclusive proof that the method can and has saved a number of persons bitten by undoubtedly poisonous snakes, for such a lengthy series cannot reasonably be explained away on the supposition that in none of them did the patients receive a lethal dose, especially when they include so large a proportion of cobra bites, in which up to ten fatal doses may be injected.

Whatever, then, may be considered to be the correct deductions from Surgeon-General Bannerman's experiments on dogs or mine on cats, the incontestable fact remains that Sir Lauder Brunton's method has saved a number of valuable human lives, and further that it is the only practical method of treating this terrible affliction under ordinary conditions of practice in India, although it should always be supplemented by the intravenous injection of antivenine in efficient doses in the rare cases in which this is possible, always bearing in mind that to neutralise the full amount of venom that may be injected by a cobra about three-quarters of a pint of serum is required (probably containing a lethal dose of horse serum), so that it is not likely to be of much service unless most of the venom has first been destroyed locally by the application of permanganate.

No one would be better pleased than I should be to see a more efficient and practical method of treating snake-bite than that of Sir Lauder Brunton, but until one is discovered such a conclusion as that in the concluding sentence of the paper under discussion, which I venture to think I have shown above is utterly unjustified by the experiments yet recorded, can only lead to regret-

table loss of life due to the neglect of the only known effective treatment of snake-bite under the conditions in which the infinite majority of cases are met with in India and other snake-infested countries, to help to avoid which retrogression is the object of this paper.

THE RADIO-ACTIVITY OF SOME WELLS AND THERMAL SPRINGS IN THE BOMBAY PRESIDENCY AND IN THE BARODA STATE

By THE REV DR A STEICHEN, DR PHIL, SJ,
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IN a previous paper* F. Sierp and myself have dealt with some of the numerous hot springs in the Bombay Presidency. The favourable reception which that paper has received relieves me of the necessity of dwelling once more on the importance of the subject. The methods used in the present paper in measuring the radio-activity of the water and the gases are the same as in the former investigations. As it is of some importance to know whether there are radio-active salts in solution in the water, care has been taken to ascertain this where it was deemed desirable. For this purpose a certain amount of water was deprived of its radio-activity by boiling and kept for some months in an hermetically closed bottle. If the water recovers some radio-activity we know for certain that it contains not only emanation but also radio-active salts.

I The Hot Springs at Turva

A description of these springs has been given in the first paper. The observations communicated in that paper were made on the 13th December 1910. At that time the springs yielded a great amount of water. On the 12th April 1911, Rev F. Sierp, SJ, Mr P. V. Mehd, MA, BSc, Mr B. N. Shah, MA, and myself visited the springs once more. Our object was to ascertain whether the radio-activity of the water had changed since our visit in December and also to examine the wells in the neighbourhood. The springs yielded relatively little water at the time of our visit in April as was to be expected just before the monsoon.

Result of observation —

We examined the water of the hot spring and found for the saturation current

154.37 Mache-Units

Comparing this value with that found in December 1910 (82.1 M U), we see that the radio-activity of the spring had almost doubled. A result like this is by no means surprising if

* The radio-activity of some thermal springs in the Bombay Presidency. By the Rev A. Steichen and the Rev F. Sierp. Transactions of the Bombay Medical and Physical Society, Vol 15, No 1, Indian Medical Gazette, Vol 46 (Dec, 1911).

we take into consideration the scarcity of water in April and make the highly probable supposition that the amount of emanation produced in the soil traversed by the water is constant

Want of time prevented us from examining also the cold spring. A similar discovery would most likely have been made

II Common Wells at Tuwa

Since the hot and the cold spring at Tuwa possess almost the same radio-activity (82 resp 84 M U in December 1910), we may safely conclude that both derive their activity from the same layer of soil traversed by both. As it is not very likely that the cold spring issues from an excessive depth there was some probability *a priori* that some radio-activity might be found in the neighbouring wells. Accordingly the water of three wells was examined by F. Sierp and myself on our visit to Tuwa, April 1911

1 The first well is about 200 ms from the springs in the direction of the railway station. The water is said to be saltish and is not used for drinking. We were, however, unable to discover any saltish taste, the water simply tasted like ordinary lukewarm water. The level of the water is about 10 ms below the ground, the temperature of the water was found to be 26°C at 2h P.M.

Result of the observation —

670 c.c. of water were taken and examined 15 minutes later. The water proved to be highly radio-active. For the saturation current we found

19.85 M U

2 The second well is at a greater distance from the springs, about half-way between the springs and the station. The level of the water is about 5 or 6 ms below the surface, and the temperature of the water was found to be 11.5°C (temperature of the air 13°C at 8 o'clock A.M.). The water is used for drinking.

Result of observation —

The radio-activity of the water is less than that of the first spring well, but still considerable. For the saturation current we found

8.1 M U

3 The third well is at the railway station, about a quarter of a mile from the springs. Its depth is about 10 ms. The water had a temperature of 26.8°C (at 11 A.M.) and is used for drinking.

Result of observation —

840 c.c. of water were examined, the saturation current was

7.2 M U

It is interesting to note that the radio-activity apparently decreases steadily as we go farther away from the hot springs. The experiments, however, are not conclusive. The decrease in the

radio-activity may be partially or totally due to the fact that the two wells farther off are resorted to much more than the nearer well, and their water is thus constantly stirred and consequently loses much of its emanation. The fact that the three wells which we examined were highly radio-active is, I believe, of great importance for a possible medicinal use of the water at Tuwa. A more extensive investigation of the neighbourhood of Tuwa and of the springs in the river bed is highly desirable.

III The Hot Springs at Uner (Baroda State), Lat $20^{\circ} 53'$, Long $73^{\circ} 22'$

These are the most famous springs in Gujarat and much frequented by pilgrims on account of their supposed sanctity. There are a number of Hindu temples in the immediate neighbourhood of the springs. The tanks, I am told, are the common property of the Baroda and Basda States. Mr. M. A. Masani, M.A., B.Sc., Director of Public Instruction of the Baroda State, had the kindness to take me to Uner on one of his tours of inspection and to introduce me to his friend Mr. Maulekji Sagai at Anaval (near Uner), whose hospitality I enjoyed. We visited the springs at Uner on the 17th and 18th April 1912. Mr. N. A. Masani, M.A., B.Sc., Professor of Chemistry, Baroda College kindly helped me in the observations.

The larger tank is about 12 ms long and 9.5 ms broad. A grating divides it into two almost equal parts. In two places the solid rock is visible on the ground. The water in the tank comes from a copious spring near one of the rocks visible in the reservoir. Its temperature is everywhere 57°C . The production of gas which issues at different places is very copious but intermittent. At one time it took us only three minutes to collect 743 c.c. of gas by means of a funnel of about 10 ms in diameter. The little brook which issues from the tank has a temperature of 56.5°C , where it leaves the stone wall which encloses the tank. Just near the place where the rivulet leaves the enclosure there is a second spring outside the wall but only some 2 ms from the main spring. Although the water of this spring mingles with the hot water from the rivulet the temperature of the spring was only 43.5°C . From this cold spring we were able to collect 743 c.c. of gas in 16 minutes.

Some 25 ms farther away is the second tank, which is only about 9 ms long and 4 ms broad. The springs in this tank yield only little water and gas. The temperature of the water was 43°C . Judging from the temperature of the water in this tank and that of the cold spring near the larger tank it seems probable that these

* Memoirs of the Geological Survey of India, Vol. 19, Pt. 2, p. 11

colder springs are but branches of one common source

It is interesting to note that we meet here with the same phenomenon as at Tuwa a pair of springs in immediate neighbourhood and of considerable difference of temperature

Results of the observations —

1 The radio-activity of the water from the hot spring

(a) First observation made at Unei on the 17th April 1912, 9-10 A M

519 c c of water were examined, the saturation current was 0 117 M U

(b) Second observation made at Unei on the 18th April 1912, at 4-7 P M

694 c c of water were examined, the saturation current was 0 092 M U

(c) Third observation, made in Bombay on the 21st April 1912, at 5-15 P M

On the 18th April at 5-15 P M 738 c c of water were collected and examined in Bombay 64 hours and 12 minutes later The saturation current was

0 046 M U

(d) Fourth observation made in Bombay on the 16th September 1912

On the 22nd April 1912, 738 c c of water were deprived of their activity by boiling and kept in a hermetically closed bottle till the 16th September 1912, when the water was again examined No radio-activity could be ascertained with certainty

2 The radio-activity of the water from the colder spring outside the larger tank

Observation made at Unei on the 17th April 1912 at 1-56 P M 720 c c of water were examined The saturation current was only

0 03 M U

3 The radio-activity of the water from the smaller tank

(a) First observation made at Unei on the 17th April 1912 at 12-32 P M

696 c c of water were examined The saturation current observed was only

0 10 M U

(b) Second observation made at Unei on the 18th April 1912 at 10-34 A M

762 c c of water were examined, the saturation current was

0 14 M U

(c) Third observation made in Bombay on the 21st April 1912, 2h P M

On the 18th April 1912 at 5h 15m P M 664 c c of water were collected and examined 68 hours and 45 minutes later The saturation current was

0 08 M U

(d) Fourth observation made in Bombay on the 17th September 1912

On the 22nd April 664 c c of water were deprived of their radio-activity by boiling, kept

in a hermetically closed bottle and examined on the 17th September 1912 The radio-activity of the water was doubtful

The apparent discrepancy between these different observations disappears when we take account of the hour of the day at which the observations were made A single glance at the results as given above shows that the radio-activity is greatest in the early hours and gradually diminishes during the day The explanation of this phenomenon is very obvious The tanks are much resorted to by bathers, hence a constant stirring of the water and a corresponding loss of emanation This also explains why the colder spring near the larger tank shows the least radio-activity This spring is used most by the people During the night when the water is not interfered with the emanation again accumulates

4 The radio-activity of the gas from the hot spring Two observations were made at Unei, on the 17th and 18th April In each case 743 c c of gas were collected and examined The saturation current was

0 63 M U on the 17th April
and

0 58 M U on the 18th April

5 The radio-activity of the gas from the colder spring near the larger tank Two observations were made at Unei on the 17th and 18th April In each case 743 c c of gas were examined The saturation current was

0 69 M U on the 17th April
and

0 58 M U on the 18th April

From these observations we see that the radio-activity of the gas of the two springs is practically the same The difference in the saturation currents found on the 17th April may be due either to some error of observation or to some mistake made when collecting the gas Another interesting conclusion which follows from the four observations given under 4 and 5 is that the radio-activity of the gas is not absolutely constant but may change slightly from day to day

From the above figures it is also readily seen that the gases are considerably more radio-active than the water This perfectly agrees with similar results obtained at Vajrabai* and with those of other observers in Europe

A comparison of the above results with those obtained at Vajrabai shows that the radio-activity of the water and the gas is of the same order of magnitude for the two sets of springs

The gas from the smaller tank was not examined because of its scarcity It was impossible to collect a sufficient amount of gas for examination within reasonable limits of time

* On the radio activity of some thermal springs in the Bombay Presidency By the Rev A Steichen and the Rev H Sierp

IV Common Well at Anaval

Anaval is a village in the Baroda State, some five miles from Unei. The well, which belongs to our generous host Mr. Manekji Sagai, is 35 ft deep and contains 5 ft of water. The water is used for drinking.

(a) First observation made in Bombay on the 20th April 1912

On the 19th April 1912 at 5 P.M., 335 c.c. of water were collected and examined in Bombay 19 hours later. The radio-activity of the water was greater than that of the water at Unei. The saturation current was

0.44 M.U.

(b) Second observation made in Bombay on the 22nd September 1912

On the 22nd April 1912, 335 c.c. of water were deprived of their emanation by boiling and examined again on the 22nd September 1912. The radio-activity of the water was doubtful.

V Common Wells at Tarkani

The village of Tarkani is about a mile from Anaval. Mr. N. A. Masani and myself examined the water of two wells. The water of these wells is bad and quite undrinkable during the monsoon.

1. The first well is 38 ft deep and has 8 ft of water. The temperature of the water is 27°C.

Result of the observations —

(a) First observation made at Tarkani on the 19th April 1912

453 c.c. of water were examined, the saturation current was

0.14 M.U.

(b) Second observation made at Tarkani on the 19th April 1912

418 c.c. of water were examined, the saturation current was

0.15 M.U.

The two observations agree well enough if we consider that the water has to be taken up in a bucket and then only is filled in the bottle, so that it is impossible to prevent air from bubbling through the water whilst filling and so carrying away some of the emanation.

2. The second well is only 15 ft deep and has 12 ft of water. The temperature of the water was 28°C.

Result of the observation

405 c.c. of water were examined. The saturation current was

0.21 M.U.

Note — The depth of all the wells is reckoned down to the surface of the water.

If we compare the radio-activity of the wells at Anaval and Tarkani with that of the hot springs at Unei it seems, at first sight, as if these wells possessed a greater radio-activity

than the hot springs at Unei. This is, however, not the case. With the hot springs we must also take into consideration the amount of emanation carried off by the large quantities of radio-active gas.

VI. The Hot Springs at Koknera (Lat 19°42', Long 72°54' E)

Koknera is a village in the Thana district. The springs can be reached easily by tonga from Palghat Station (G. I. P. Ry.) in two hours. They are situated on the right bank of the Surya River, an affluent of the Vaitarana, about a mile and a half from the range of hills. The nearest temple is half a mile off. The springs are sacred to the Hindoo god Shankei. Two fairs are held here annually, one at Sankranti (14th January), the other at Shiviatri (in February). The springs are in a highly neglected state and yield only little water which comes forth in different places on the bank. Two particular places, however, deserve special notice. In the one the scanty water flows from an underground groove into a trough, which serves as a bathing place for men. The water has here a temperature of 52°C. Near the trough some remnants of brick masonry are seen. The second place, two miles higher up, is but a large pool (2 to 3 miles in diameter) which serves as a bathing place for women. The temperature of the water is here only 40°C. Only the colder pool yields now and then some bubbles of gas. The popular belief has it that originally there was only one spring. I think this is correct. Probably the original spring was nearer to the hills. What is now called the hot spring seems to me to be only the outlet of a tank now filled in, which surrounded the spring proper. A quarter of a mile from the hot spring there is another little spring in the river bed. Its temperature is 32°C. There is much gas occluded in the mud of this spring, too much perhaps to be due only to the rotten substances in the water.

Results of observations

Mr. N. A. Masani and myself visited these springs on the 23rd April 1912.

1. The radio-activity of the water in the trough (temp 52°C)

(a) First observation, made at Koknera on the 23rd April 1912, 678 c.c. of water were examined, the saturation current was only

0.023 M.U.

(b) Second observation, made in Bombay on the 15th September 1912, 760 c.c. of water were deprived of their radio-activity by boiling on the 28th April 1912 and examined on the 15th September. The water had recovered much of its radio-activity.

2 The radio-activity of the water in the pool (temp 40°C)

(a) First observation, made at Koknera on the 23rd April 1912, 615 c c of water were examined, the saturation current was

0.022 M U

(b) Second observation, made in Bombay on the 17th September 1912, 771 c c of water were deprived of their radio-activity on the 26th April 1912 and examined on the 17th September 1912. No activity was found in the water.

VII Common Well between Palghar and Koknera

There is at the entrance of the mountain pass, opposite the toll house, on the road from Palghar to Koknera, a well about 40 ft deep, which has excellent drinking water. The fact that this well is dug into the volcanic rock of the mountain determined me to examine its water.

Result of observations

(a) First observation, made in Bombay on the 25th April 1912

On the 23rd April 1912 at 3h 25' P M, 569 c c of water were collected and examined in Bombay 46 hours later. The saturation current was

0.45 M U

(b) Second observation, made in Bombay on the 16th September 1912

On the 27th April 1912, 569 c c of water were deprived of their radio-activity in the usual way. On examining the water on the 16th September 1912 no radio-activity was found.

Considering the considerable delay and the fact that the well was much resorted to by travellers, and also that the water had first to be taken up in a bucket and then only was filled into the bottle, so that a large percentage of the emanation was lost in this way, the result of the first observation must be said to be satisfactory.

VIII The Hot Springs at Lakha

(Lat 26°16', Long 67°35' *)

These springs I have not visited myself. Mr N N Godbole, M A, B Sc, who has seen them informs me that they are looked upon as very sacred, and that many people with skin diseases bathe there daily. Mr Bhagchandani Menghraj Gunomal kindly sent me some water from the springs. According to that gentleman the temperature of the water is 38°C.

Results of observation

(a) First observation, made in Bombay on the 18th March 1912

On the 15th March 1912 at 12h noon 416 c c of water were collected and examined in Bombay 70 hours later. The saturation current was

1 M U

(b) Second observation, made in Bombay on the 13th September 1912

On the 20th March 416 c c of water were deprived of their emanation by boiling. On the 13th September 1912 the water had recovered some of the radio-activity.

IX The Hot Springs at Munga Per.

(Lat 24°59', Long 67°6' *)

Also these springs I did not visit myself.

The temperature of the water is 50°C (N N. Godbole)

Results of the observations

Mr N N Godbole, M A, B Sc, sent me two bottles of water from the springs. The water had been collected on the 26th March 1912, 4 P M

(a) First observation, made in Bombay on the 29th March 1912

The bottle contained 342 c c of water. The observation was made 72 hours after the water had been collected. The saturation current was

0.88 M U

(b) Second observation, made in Bombay on the 30th March 1912

352 c c of water were examined 92 hours after the water had been collected. The saturation current was

0.69 M U

(c) Third observation, made in Bombay on the 14th September 1912

On the 5th May 1912, 931 c c of water were deprived of their radio-activity by boiling and examined again on the 14th September 1912. The water had recovered some radio-activity.

Conclusion—In radio-therapeutics the inhalation of the emanation of radium is much used and even special apparatuses are devised for this purpose†. At Tuwa, Vajrabai, and Unei comparatively large amounts of emanation are diffused in the air by day and by night. One might therefore expect that the inhalation alone of this air must have a beneficial effect on the organism especially if suitable arrangements were made to prevent the emanation from being carried away too quickly by the wind. In this way India might get some day a number of excellent sanatoria. Moreover it is a well known fact that the treatment of patients with radio-active water is most successful near the springs. This is probably due to the circumstance that in this case the patient has not only the benefit of the emanation dissolved in the water, but inhales at the same time relatively considerable quantities of emanation with the air. In their present condition the thermal springs in India are of very little or no use whatever. This state of affairs cannot be allowed to continue. Thermal springs

* Mem. of the Geol. Survey of India, Vol 19, Pt 2, p 12
† E S London, Das Radium in der Biologie und Medizin, (Leipzig, 1911), pp 124—168

{ Mem. of the Geol. Survey of India, Vol 19, Pt 2, p 14

have proved a great boon to Europe. There is a widely spread belief amongst medical authorities that the thermal springs in Europe owe their efficacy chiefly to their radio-activity. If this belief is correct, and there are good reasons to suppose that it is, the thermal springs in India are also worth trying.

THE INFLUENCE OF THE MONSOON ON THE INCIDENCE OF ECLAMPSIA

By G. C. FRASER, M.D.,

CAPT., I.M.S.

THE overwhelming incidence of eclampsia during the wet seasons of the year as compared with admissions from that disease in the dry months, has as yet I believe received no attention whatever in literature.

During a wet spell in 1911, the large number of eclamptic patients admitted to the Government Maternity Hospital in Madras compelled itself upon my attention, and when commenting upon the fact to Lt-Col G. G. Giffard, the Superintendent, and to others employed in that institute, I was informed that it was usual for admissions to increase during a wet spell. Experience proved this to be the case. When in the early days of the north east monsoon, the skies were overcast, clouds hung low and rain poured continuously, saturating the atmosphere with moisture, then the eclamptics literally swarmed in.

When the skies were clear, the air dry and crisp and the temperature high, we began to forget that there was such a disease as eclampsia, so few cases were admitted to remind us of it. Contrast this state of things with the advent of the monsoon, not one case but two, three or even five cases in a day, would be admitted.

I of course speak only of Madras, but I conjecture that that presidency is no more peculiar in this respect than others. Statistics would give valuable aid in elucidating this point, and one would expect to find the incidence is lower in dry zones and higher in the wet.

Eclampsia is a condition of toxæmia associated with pregnancy, due to the retention or formation of an undetermined poison or poisons in the system, which acting on the higher centres produces reflex convulsions and coma. Albuminuria although a common is not a necessary accompaniment of the disease.

Accepting this as a definition of the complaint how are we to associate with it the mal-effects of the monsoon?

Two suggestions have been made to me which are deserving of mention. Firstly, that the mental depression caused by the gloomy, wet weather, acts sympathetically on the centres controlling the excretions of the kidney and other excretory organs, depressing their functions and leading to an accumulation of toxic

matters in the body. This may be so, but it is a theory difficult or impossible to prove.

Secondly, it was suggested that the increase in the admissions from eclampsia, was but part of the general increase from all diseases noted in wet weather. Very few native godowns are entirely waterproof and many a patient comes in "out of the wet" during the monsoon, who would not dream of entering the hospital in fine weather. This must exercise some influence no doubt, but the increase is altogether too marked to be lightly accounted for in this way.

The true cause I believe is to be sought for in the decreased output of the sweat glands. It is a common saying that one perspires more during the clammy heat of the monsoon than during the dry season, but this is a long way from the truth. As a matter of fact, we perspire less owing to the lower temperatures prevailing, on the other hand, the surrounding atmosphere is so saturated with moisture that evaporation of sweat from our skin is reduced almost to a negative quantity, the consequence being that the sweat accumulates and becomes visible. In a dry, hot temperature, the sweat evaporates as fast as it is secreted and so the sweat ducts are kept continually cleared, capillary attraction playing a great part in bringing the sweat to the surface *via* the minute ducts. On the other hand, if the sweat accumulates on the skin, the capillary action will cease and the ducts will be hopelessly waterlogged. As a natural sequence, a great accumulation of waste-bodies, toxic to a degree, which would otherwise have been got rid of, collect in the deep layers of the skin and are sooner or later carried off into the blood-stream, there to be carried to and act as powerful excitants of the higher centres or to set up acute inflammations of the kidneys and other organs.

In pregnancy this effect is increased because there is a normal hypersecretion from most of the secretory organs, and a greater accumulation of toxic bodies will therefore take place if the sweat glands should happen to be thrown out of gear. It is this primary accumulation that causes the secondary involvement of the kidneys and the final grave toxæmia, the symptoms of which we know as eclampsia. On first considerations one would expect that if waterlogging of the sweat ducts be the true cause of the frequency of eclampsia in wet seasons, then in wet areas, such as those of the west coast, the disease should be relatively very common. A little thought, however, will show us, that a people subjected to a chronically wet climate for many generations, will by a process of evolution and survival of the fittest have accommodated themselves to the prevailing conditions. It does not therefore follow that eclampsia is more frequent in wet districts than in the dry. In Madras we are accustomed to long spells of dry weather with high temperatures,

and short ones of wet and somewhat lower temperatures. It is in such a climate that we should expect the theory to fit in and the facts actually support it. The sweat glands which have been working smoothly for many months of dry weather, with the advent of the monsoon are quite suddenly thrown out of action by the accumulation of sweat in the ducts.

A recognition of the causes should give us a clue to the treatment, we have not only to increase the output of the sweat glands, but what is as important, to get rid of that already secreted, so as to clear the ducts and allow secretion to go on at a greater pace. This can be done by subjecting the patient to a dry, hot atmosphere, and I hope in the future to have an opportunity of treating eclamptics in this way.

The method I propose is to place the patients in a ward of special construction, the air in which has been filtered through apertures or tubes containing hygroscopic bodies such as calcium chloride, asbestos or lime so as to remove all moisture. An electric warmer would be used to raise the temperature to about 90°. The ventilation would have to be forced by electric fans and the general scheme should present no insuperable difficulties. A small, experimental ward for one or two patients to begin with would be sufficient, and if the treatment succeeded more space would have to be utilised.

(I notice that the new law courts at home are supplied with washed and filtered air so that the application of contrivances like those mentioned above should be an easy and inexpensive matter when applied to a much smaller air space.)

In advocating such treatment I do not for one moment suggest departing from the ordinary lines adopted in the treatment of acute cases, but suspects containing much albumen in the urine or with dropsy, headaches, cramps and other suspicious premonitory symptoms, could be treated in the dry-air-ward merely as a prophylactic measure.

Acute cases suffering from convulsions or those requiring delivery or other operative measures, would be treated first of all in a labour ward or theatre, and then subsequently be removed to the dry-air-ward.

A few words on the general treatment of eclampsia will not be out of place here.

On admission the patient, if suffering from convulsions, will be placed on a special padded bed or on a mattress on the floor. The clothes at the neck and waist, garters, etc., are to be loosened and all jewels, hair-pins, bangles, especially glass ones, are to be removed. These precautions must be adopted to protect the patient from herself and, with a similar object, a gag must be used to protect the tongue during the progress of a fit.

The urine should next be drawn off and tested for albumen, the temperature taken, and if high an ice-bag should be applied to the head

or the wet pack employed. Place the patient on a macintosh, cover with a sheet, after removing the clothing beneath which, raise the head of the bed and put a bath at the foot to collect the water as it runs from the protected bed. Iced-water can now be poured over the patient, and if the temperature still continues high, an ice enema can be given.

In the interval between the convulsions the stomach should be washed out with warm normal saline and as soon as the return comes clear, a pint or so of the saline may be run in and left together with a saline purge and some thyroid extract.

The administration of the latter drug must be entirely regulated by the tension of the pulse, a large dose with one of high tension and a small dose with a low tension. If the pulse be feeble, thyroid extracts is contra-indicated. Chloroform should never be administered for the purpose of controlling the convulsions, it is only adding one toxin to another and placing a further strain on a system which is already in a precarious condition. Opium in the form of morphia, administered hypodermically, is the drug to be relied on for this purpose. It should be pushed to heroic dosage.

Instrumental interference is a moot point, but if the cervix is dilated fully or easily dilatable or if the head is in the cavity, no time should be lost before delivering with forceps.

It is to be remembered that the majority of children of eclamptics are still-born, and a large proportion of those born alive, die subsequently from convulsions, probably because they share in the general toxæmia of the parent. If any difficulty, therefore, be met with, perforation and extraction with forceps should be carried out without hesitation.

No food should be given to the patient for at least twenty-four hours, even should the patient recover consciousness, after which time a purely milk diet is to be ordered and strictly adhered to until convalescence is well advanced.

THE DIAGNOSIS OF SAND FLY FEVER AND ITS DIFFERENTIATION FROM MALARIA

By E. C. TAYLOR,

CAPTAIN, I. M. S.,

AND

MOHAMMAD HAKIMULLAH KHAN,

Assistant Surgeon

DURING the months June to September 1912, 161 cases of Sand-fly fever and 112 cases of Malaria were admitted to the Militia Hospital, Panachinai. We were thus able to compare Sand-fly fever both with recurrent attacks of malaria occurring during the summer months and with those having fresh malarial infection in the fever season (August and September).

The bloods of all these cases were examined and the results used to confirm our observations. But without blood examination it appears to us possible to differentiate these diseases in the great percentage of cases. Up to date we have seen no records giving sufficient details to enable this to be done and hence venture to publish our observations.

We use the term "Sand-fly fever" as opposed to "Three-day fever," because in the majority of our cases the fever did not last three days. The period of pyrexia in 161 cases was as follows—

One day	73
Two days	55
Three days	24
Four days or more	9

In Sand-fly fever there are three notable features.—

1. The complaint of very severe body pains
2. The presence of catarrhal signs
3. The slow pulse

The first point we noticed was that the patient came in complaining of pains and not of fever, many thought that they had not got fever, these pains were situated chiefly in the body and limbs, and were generally most severe in the loins, continued for several hours after the fever subsided and were sufficient to make the patient groan with their intensity.

The next point was that catarrh was present. The first cases we had were isolated under the suspicion of being "Early measles." The face is red, eyes suffused and fauces injected, an almost invariable sign being a well marked angry looking injection of the soft palate, with a clear dividing line between the injected posterior and uninjected anterior portion of the mucous membrane covering the roof of the mouth. In some cases the injected area became quite dry and the uvula would be found sticking to one or other side of the soft palate.

The third point was that the pulse was markedly slow. In cases with a temperature of over 102 the pulse rarely exceeded 100, and on the morning of the second day when the temperature would be over 100, the pulse would be between 80 and 90 and soon drops to 60 or 70.

The presence or absence of an enlarged spleen gave us little help, there is nothing in the enlargement to prevent the subject getting Sand-fly infection.

On the other hand, in malaria the patient complains of fever and not of pains, then answer to the question of "What is the matter with you?" is "I have fever" and not "I have pains." When seen during the morning visit the picture presents a great difference from that of Sand-fly fever. The subject, though

he may have been flushed and have had red eyes during the height of the paroxysm, is now pale, his fauces and palate are clean, and though his temperature is nearly normal, his pulse rate is generally above 100.

We have made a careful analysis of admissions during August.

There were in all 125 admissions for pyrexia of these

3	were due to Tubercle,
2	to Enteric fever,
47	were Sand-fly fever,
68	Malaria,
5	remained undiagnosed

Of the 68 cases diagnosed as Malaria, parasites were found in 53, the remaining 15 cases were diagnosed by the clinical history, signs and course of the disease. None of these cases showed either injection of palate, catarrh or very severe pains. Of the 53 cases in which parasites were found—

10 had pulses under 100, but neither of the other signs,

10 showed injection of palate, but each had a pulse of over 100,

3 showed all the notable signs yet had malarial parasites.

Of the 47 cases diagnosed as Sand-fly fever—

37 presented all the notable signs, *i.e.*, severe general pains, soft palate injection and a slow pulse,

10 had the first two but the pulse was in all over 100 on admission.

PRELIMINARY NOTE ON SOME CASES OF SPIRILLAR FEVER IN THE DARJEELING DISTRICT

By A. M. Jukes, M.D. (Lond.), D.P.H. (Camb.),

CANT, INS.

DURING the past few months there have been in the Darjeeling District small localised epidemics of fever, the diagnosis of which has presented some difficulty, some of these epidemics have presented a very high mortality.

On Sept 20th 1912 Dr Baldwin Seal of Darjeeling, asked me to accompany him to Takrai Tea Garden, to see some coolies who were ill. On arrival there I obtained the following history of the epidemic—

There had been altogether 14 cases of illness all occurring in one small isolated group of houses amongst the Gukha Tea Garden coolies. The patients fell ill in batches of two or three at a time, with an interval of about three weeks separating the batches. All the patients presented the same symptoms, *i.e.*, fever, usually about 101° to 102° F, but in some cases going up to 104° to 105° F, headache jaundice the

intensity of which varied considerably, nausea, but no vomiting, there was no albuminuria. The first eight patients became delirious, comatose, and died about the 7th or 8th day of the disease. The next three recovered but were still weak at the time of my visit, the last three were still ill, and had had fever for about six days. One of these patients was, I thought, dying, but ultimately all three recovered.

I took blood films from all three of these patients, and on returning to Darjeeling, stained them with Leishman's stain. In one film from a boy of about 18 I found a very large number of spirilla (from one to six in almost every field), in the blood of the other two patients, the parents of this boy, I found no spirilla, but I think there is no doubt that all these 14 patients had had the same disease.

Since that date I have found spirilla in the blood of 3 other patients from different localities in Darjeeling itself, in every case the symptoms were the same as those described above. Two were middle aged men, and after being very seriously ill for some days they recovered, the third was a girl of about 20, six months pregnant, who miscarried and died on the 9th day of the disease. All three of these patients stated that other members of their families had been ill with similar symptoms shortly before, and in several cases death had resulted.

I examined the blood from these patients daily, and found in every case diminution in the number of spirilla after about the 6th day and a simultaneous rise in the number of polymorphonuclear leucocytes, this was very marked in the case of the girl who died. She had a very high leucocytosis and a complete absence of spirilla on the day before her death. Spirilla disappeared from the other patients on about the 8th or 9th day.

I am inclined to regard this as a new form of spirillar fever for the following reasons —

- 1 The severity of the illness and the high mortality accompanying it
- 2 The duration of the fever 8 to 10 days
- 3 The absence of relapses in those who recover

I am inclined to think that the spirillum is shorter, thinner and less actively motile than *Sp. Obermeiri*, but as I have no practical experience of the latter, I do not lay much stress on this.

I have so far failed to keep the spirillum alive, either in culture media, or by inoculating white rats.

I am indebted to Dr Seal for permission to publish particulars about this epidemic at Takvar, and to Major Gwyther, I.M.S., for kindly giving me facilities for seeing suspected patients in Darjeeling.

A Mirror of Hospital Practice.

A CASE OF CONSERVATIVE SURGERY

By HODGKINSON LACK,

CAPT, I.M.S.,

Civil Surgeon, Bhamo

THE following case may be of interest in that it shows fairly well the dangers and the benefits resulting from attempts at Conservative Surgery. Sepoy B R, aged 38 years, Dogra, was admitted into the Military Police Hospital, Bhamo, on the 8th January 1912, with a sloughing ulcer on the plantar surface of the right heel.

He stated that seven days before, while out on forage duty, a thorn ran into the heel. On return to camp the heel was cut open with a nail knife and the thorn was taken out resulting in temporary relief.

Thereafter the pain increased steadily and at the end of a week he was sent in to head-quarters.

On admission his temperature was 102.8°, his tongue foul, and he had acute pain in the foot. The ulcer in the heel was about the size of a rupee, septic, very tender, reaching to and penetrating the plantar fascia, there was swelling extending from the wound upwards on each side of the ankle towards the dorsum.

Under chloroform an incision was made from the margin of the ulcer towards the toes but no pus could be detected, on the incision being carried backwards towards the convexity of the heel and on cutting through the plantar fascia about a teaspoonful of pus escaped. The wound was cleaned and dressed.

There was some chloroform sickness and some pain in the chest with friction sounds high up in the left axilla.

From the next day onwards the history of the case is merely one of continuous burrowing of pus along and between the intra-muscular fascial planes of the foot, the pleuritic friction having disappeared on the 12th January 1912.

The patient was of a neurotic type unable to bear any pain, and as a result each dressing had to be done under chloroform.

On the 19th January 1912, there appeared some gangrene of the 4th and 5th toes, but the temperature being normal and the patient's general condition fairly good, I decided to try and save them along with the remainder of the foot.

On the 26th January 1902, while being dressed under chloroform, the patient had a hæmorrhage from the lungs, and it appeared to me that my attempt at saving the foot was ending in disaster.

He was put back in bed, kept there and the foot was placed in an antiseptic bath, all attempts at dressing being given up. A nutritious and stimulating diet was given.

On 13th February 1912, he appeared able to stand chloroform and the gangrenous toes were amputated by separate racquet shaped incisions, hæmorrhage was abundant and was controllable only by means of hot plugging.

From that date onwards the progress was steady with the exception of the dates between 4th to 9th March 1912, when there was some pain and swelling in the substance of the right gluteus medius muscle. The swelling was incised and explored but no pus could be found, and the swelling cleared up and the wound healed up without any further trouble.

The ultimate result is that the patient has a good foot on which he will be able to march—that is to say, he can continue his employment as a sepoy in the Military Police.

My own criticisms on the case are as follows—

1st—On any date between 10th January 1912 and 19th January 1912, it might have been justifiable to amputate the foot because of the generalized infiltration of the pus.

2nd—On the 19th January 1912, the 4th and 5th toes should have been amputated, but there seemed a chance of saving them bearing in mind my attempt to save the whole foot.

3rd—Continuous antiseptic irrigation should have been adopted earlier.

4th—On 13th February 1912 amputation of the foot might have been justifiable, but it seemed worth while to content myself with amputating the gangrenous toes and to continue the attempt to secure a foot which would be useful for marching.

On the whole, the result aimed at has been attained, but I am not certain that might not have been attained more quickly, and I am quite certain that it would not have been attained without the assiduous care and attention given to the case by Assistant-Surgeon T Henderson Brooks.

A CASE OF PLAGUE—ABDOMINAL TYPE

By R. KNOWLES,

CAPT, I.M.S.,

Plague Officer, Jhansi

As the abdominal type of plague is rare in the human subject, the following notes of a case may be of interest.

In December 1911, Mohalla Dhamsala was the chief focus of plague in Jhansi city. House No. 139, Dhamsala stood right in the middle of this infected area. It belongs to the Gwalior mission and is inhabited by Native Christians. In December 1911, there were living there three orphans—Chadami, a boy aged 13, his brother Latoro aged 10, and his sister Januiya aged 8.

On 7th December 1911 I was called in to see Latoro. He was delirious, with high fever, suffused eyes, and a tender left femoral bubo. He

died on 9th December 1911. I inoculated the inmates of the house, but the other two orphans were absent and were not inoculated.

On 11th December 1911, Chadami came to the Sadr Dispensary enquiring Januiya. She had been seized with fever and vomiting the day before. The temperature was 105, the child was comatose, with suffused eyes and a dry hot skin. Both children were put into an isolated ward.

On the morning of the 12th the temperature had fallen to normal. The patient was conscious and complained of abdominal pain. There were tympanites, pain over the whole abdomen on pressure, diarrhoea with passage of stools containing some blood and much mucus, palpable spleen and furred tongue. The eyes were heavy and suffused.

No bubo of any sort could be discovered anywhere, either before or after death, although all glandular sites were carefully palpated daily.

The same evening the temperature rose again to 102, on the 13th to 104 with weak thready pulse. Treatment was by diet of hot milk and bland, Pulv. ipecac. co. and diaphoretics. Patient died on the 15th.

A *post-mortem* examination was made of the abdomen only. No bubo could be palpated anywhere. The mesenteric lymphatic glands were everywhere congested, hard, swollen, of a brick red colour and many proved hæmorrhagic on section. The spleen was enlarged, congested, hard, of a deep blue black colour, and engorged with blood.

The whole of the small intestine—but particularly its cæcal end—showed longitudinal ulcers. The sites of these were visible from the peritoneal aspect owing to their hæmorrhagic character. The ulcers were large, shallow, with soft swollen edges, hæmorrhagic bases and situated in the long axis of the feet. The contents of the small intestine—some blood and much mucus—resembled red curant jelly. (There was no intussusception.)

Film smears from the cut surfaces of the mesenteric glands showed—

i Some long granular bacilli—probably *B. coli* commune.

ii Short curved bacilli—probably the same.

iii Short oval bipolar staining bacilli similar to *B. pestis*.

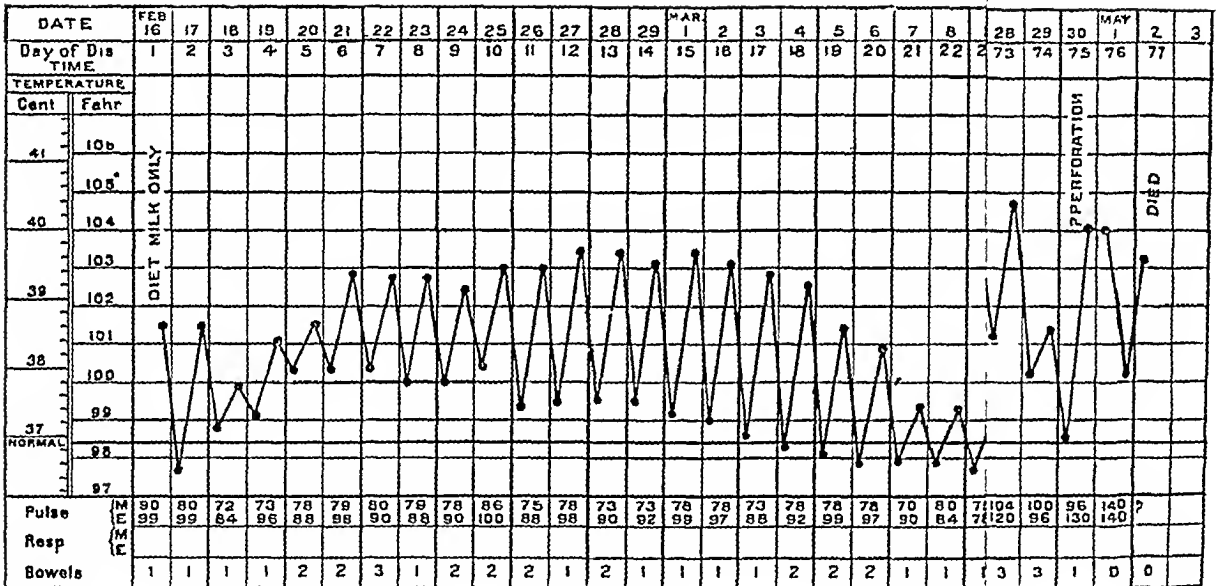
There were not abundant but could be freely found.

Film smears from a portion of the interior of the spleen showed the same bipolar staining bacillus in considerable numbers. The film looked like a thinned out smear from a plague rat spleen.

A portion of the small intestine was sent to Kasauli. I am indebted to Captain E. C. Hodgson, I.M.S., Assistant Director of the Central Research Institute, for kind permission to quote his findings.—

“On section cutting pieces of the intestine the bases of the ulcers showed small foci containing masses of bacilli morphologically similar to plague.”

Abstract



bacilli, below the basement membrane,—none similar to *B typhosus*”

The case seems to have been almost undoubtedly one of the purely abdominal type of plague. There were no lung symptoms.

On 12th December 1911, the day after admission, the third orphan Chadani developed fever, which continued for four days. A tender, hard bubo developed under the chin in the submental region on the third day. This bubo, at its maximum at the end of a week, was tender, infiltrated and not movable. On the fifth day the fever disappeared, the bubo steadily diminished and this patient is now in good health. He had some carious teeth in the lower jaw. I have no idea whether his case was one of *pestis minor* or not, and did not incise the bubo to find out as the child was in a state of panic at the death of his brother and sister.

A CASE OF ENTERIC FEVER IN A SEPOY ENDING FATALLY ON THE 77TH DAY

BY E S PHIPSON, M.B., B.S. (LOND.),

CAPTAIN, I.M.S.

THE type of enteric fever seen in the hospitals of the Indian Army is as a rule so mild and so free from serious complications that the following particulars of a case recently under my care may be read with interest.

The patient was a Punjabi Mohamadan recruit of a few months' service. At the outset the case presented all the features of the mild type of enteric fever referred to. Abdominal symptoms were limited to slight looseness of the bowels hardly amounting to diarrhoea during the second week, together with slight abdominal tenderness which could be made out on and off until the 12th day, but no abdominal pain. During the whole of this febrile period the patient's condition gave rise to no anxiety, defervescence occurred on the 24th day and everything pointed to a good recovery. The patient was placed on a milk diet until the 38th day, that is, until 12 days after defervescence, when the diet was supplemented by farinaceous food. As will be seen from the chart this produced a temperature reaction and it was accordingly stopped. The food was again added on the 52nd day, and was then well tolerated. On the evening of the 55th day a rise of temperature occurred which continued to oscillate until the 58th day when it again subsided. This rise in temperature did not appear to be connected with the increase in diet, which was therefore maintained. A small rise occurred on the evening of the 62nd day which was explainable by a slight attack of coryza from which the patient was suffering.

The patient's general condition at this time left nothing to be desired. He was bright and cheerful, very hungry and continually asking for a more substantial diet, which, on account of his digestive intolerance, was still restricted to

milk and farinaceous food in the form of arrow-root or sago. Unfortunately this craving for solid food led to disaster, for on the 65th day he surreptitiously obtained and consumed a meal of *chupatties* and *halwa* although he had been repeatedly warned of the probable results of eating unauthorised food. The temperature immediately ran up to 103, and a severe relapse set in. On the 75th day symptoms and signs pointing to perforation manifested themselves, and, as the patient and his relations declined laparotomy, the case ended fatally on the 77th day. Unfortunately a *post-mortem* examination could not be obtained, and the precise pathological condition which marked the close of the case must therefore remain to some extent a matter of surmise.

The unusual features of this case appear to me to be the prolonged digestive intolerance which lasted to the end, the extremely late occurrence of the relapse which took place nearly 6 weeks after the original defervescence, and the deceptive condition of the patient, which, outwardly so good, marked an internal condition of extreme instability, which, the moment any serious strain was placed upon it, flashed into an acute and fatal relapse.

Bacteriologically the case was unsatisfactory. Unfortunately no blood cultures were made, but the Widal reaction to *B typhosus* was feebly marked on the 16th day in dilutions of 1/60 and 1/80. On the 70th day, during the relapse, it was *nil* in all dilutions, suggesting that what little powers of specific resistance the patient had originally possessed were all dissipated by the virulence of the relapse.

A CASE OF CEREBRO-SPINAL MENINGITIS

BY A H NAPIER,

CAPT, I.M.S.

THE accompanying chart is that of a case of cerebro-spinal meningitis.

The patient was a syce about 22 years old and of rather poor physique.

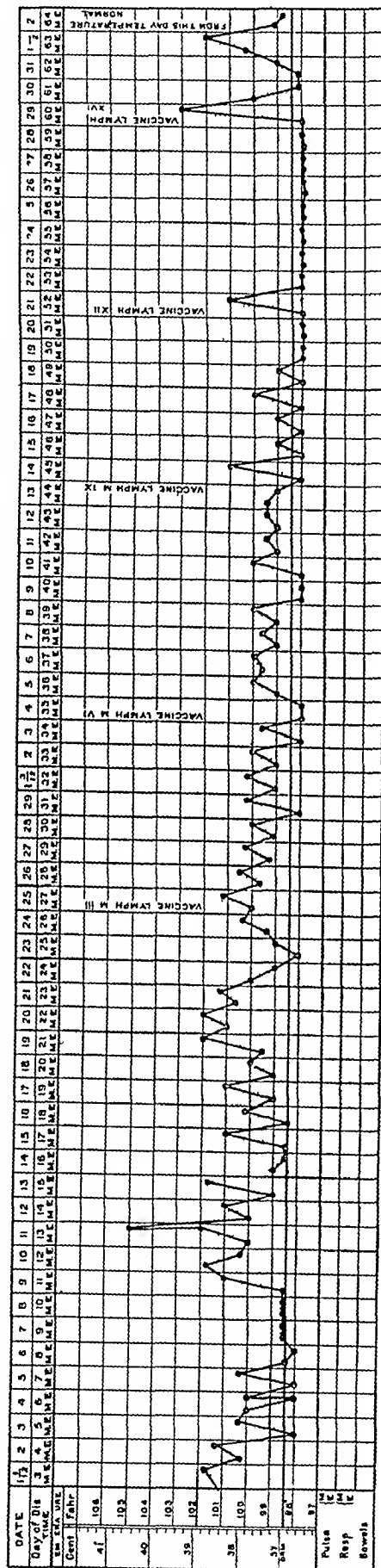
Previous history—unimportant, there were no signs of middle ear disease, nor of nose trouble.

The case was quite typical and the diagnosis was based on the following facts—

- (1) Slight fever with slow pulse and rapid respiration
- (2) Retraction of neck not marked and not present in the first four days of illness
- (3) Presence of Kernig's sign
- (4) Delirium present from 25th night for 36 hours and then coma
- (5) Absence of physical signs in internal organs to account for fever. Blood slides were negative for malarial parasites, but revealed a slight leucocytosis—

Polymorphonuclears	75 %
Mononuclears	20 %
Lymphocytes about	5 %

A CASE OF CEREBRO SPINAL MENINGITIS



(6) Cerebro-spinal fluid $8\frac{1}{2}$ 3 drawn off by lumbar puncture on $1\frac{6}{12}$. The fluid was slightly turbid and

had a faint yellow tinge Albumen present No reducing substance for Fehling's Solution present Microscopically—Practically all cells were polymorphonuclear

There were no tubercle bacilli present, but there were a few diplococci, some of which were intra-cellular

The case was probably one of C S Meningitis due to Weichælbbaum's Diploc Intracellularis Meningitidis

In this station, Dera Ismail Khan, one or two cases of meningitis are admitted yearly into the regimental hospitals

It is stated that the cerebro-spinal canal is $1\frac{1}{2}$ " from the skin in children and 2"—3" in adults In this case, the canal was only $1\frac{1}{2}$ " from the surface I, made two unsuccessful efforts to strike the canal inserting the needle about $\frac{1}{2}$ " from the middle line, and only found the canal on going in in the middle line between the 1st and 2nd lumbar vertebrae

In the same case, one may easily strike the cerebro spinal canal and later, using the same means, fiddle about for a considerable time and miss it altogether If there is any difficulty in entering the canal one should not hesitate to go in in the middle line, as it is always easier to find the cerebro-spinal canal from the middle line

GLYCERINE AS AN ANTIPHLOGISTIC

B. F. O. G. WADE,

Asst Surgeon in Charge, Ghaziabad Railway Hospital

I CAME across some remarks in the *Practitioner* about the use of Glycerine as an Antiphlogistic, and a few days later was called to see a missionary lady with a carbuncle on her chin Being 69 years of age and having an affection of the heart, I did not dare to use the knife and chloroform, and resorted to the Glycerine Compress, with the following result —

Miss W., a missionary lady, aged 69 years Was called to see her on the 5th evening and found a carbuncle about the size of a rupee on her chin, about the angle of the mouth There was a surrounding inflammation about $1\frac{1}{2}$ " and pain the whole right side of the face and was referred to head I touched the several openings with Acid Carbohc and applied a Glycerine Compress

6th.—She said she had not spent such a good night for the last week The inflammation had reduced from $1\frac{1}{2}$ " to 1", the pain had reduced somewhat and the sore was discharging freely I added 2 per cent of Acid Boric and Acid Salicylic to the Glycerine.

7th.—Surrounding inflammation reduced to $\frac{1}{2}$ " No pain except at the sore itself General condition much improved Temperature normal

8th.—Surrounding inflammation reduced $\frac{1}{4}$ " No pain Slept well Sore discharging freely, quite cheerful Temperature normal

9th.—No surrounding inflammation Slight discharge No pain Several of the openings quite closed Slept well Temperature normal

10th.—No discharge Sore healing I saw her again on the 14th, the carbuncle was perfectly healed

* Fever every evening for the last 5 or 6 days She also wore a very anxious and painful expression on the face and seemed absolutely worn out and very pale

Indian Medical Gazette.

DECEMBER

INFELIX OPPORTUNITATE

MOST of our readers will have seen the letter to the *Times* on Indian sanitary matters which appeared recently over the signatures of Colonel W G King, I M S (retd), C I E, and Dr Simpson (Health Officer of Calcutta in the nineties)

On reading this letter we were at once struck by the fact of the singularly inopportune moment which these well known sanitarians have taken to make their attack. We have ourselves expressed the fear that the new scheme for Health Officers may not get the best men available, but we must all admit that a scheme which will provide in the near future special Health Officers and Sanitary Inspectors in every town of any importance throughout India is at least a marked advance.

Already the Government Resolution has borne fruit. Madras, thanks to Colonel King himself, has long been ahead in the matter of training Sanitary Inspectors. Now all the other Provinces and Presidencies are hastening to follow suit, as we write there comes in the Government of Bengal scheme (published in the *Calcutta Gazette* for November 6th), for the appointment and training of Health Officers and Sanitary Inspectors for that Presidency.

No one will pretend that the recent scheme of the Government of India will revolutionise the Sanitation of India, nor are we in favour of revolutionary methods in such matters. The natives of India are essentially conservative and sanitary procedure even in such enlightened cities as Leicester, for example, in England are not always received as they should be, even by educated communities.

The Government of India scheme has certainly stimulated all Governments, Local Boards and Municipalities to action and the action of the advisers of the Government of India has not been confined to writing resolutions.

We have said that our critics have chosen an inopportune period for making their attack. The merest reader of the daily press is aware that sanitation is "in the air."

The alliance of the sanitary department officially with that of education is bearing good fruit. Think for a moment what has

been done within the past year or so. New Institutes of Research founded, a Bureau of Science established, special investigations started into cholera, malaria, leprosy, kala-azar, and the danger of yellow fever, the appointment of new Deputy Sanitary Commissioners, the new scheme for Health Officers of Towns, the establishment of a Central Malaria Institute at Amritsar, the establishment of Malaria Committees in all the Provinces—a great Tropical Medical School for Calcutta. Surely all these mark a notable advance, and show that now at least sanitation in India has become a reality and that much is being done. Again, care has been taken to enlist on the side of sanitation the people and the educated community. For example, in the recent report of the Conference on the important question of a water-supply for rural areas in Bengal, the President, the Hon'ble Syed Shamsul Huda, strongly called for the cordial co-operation of the people.

Again, the Sanitary Conferences at Bombay in November 1911 and at Madras in November 1912 are great steps in advance and serve not only to advance knowledge but keep alive the interest of Government and of the public in sanitary matters.

We therefore repeat that we think the time chosen by Colonel King and Dr Simpson for their attack has been singularly badly chosen, a time when there is a marked activity in the life of the Sanitary Departments of India.

We need hardly waste the time of our readers in pointing out the absurdity of comparing the great progress in the improvement of the health of our armies and of our prisoners with the absence of such in the case of the general health of the people. We all admit and know this and all our readers who in their various official capacities have taken their share in this great progress are proud of the results attained, but they will not for a moment compare the cases of our carefully looked after and medically attended soldiers and prisoners with the case of the rural communities in all parts of India. To elaborate an argument against the Government of India on such a foundation will avail little.

The alleged subordination of the Sanitary Commissioner to the Government of India and the Head of the Medical Service, is another of the critics' charges, but, we incline to believe that the taking from him of a mass of office routine

will only enable him to be the more useful and to spend more time in touring and making himself acquainted with the work being done and the needs of the Provinces all over India. The Sanitary Commissioner is above all an advisory officer, a technical expert rather than an administrative officer, and, after all, the medical services in India, which include the sanitary, must have one head, and of recent years the Head of the Department has had his position greatly improved and his opportunities increased by his being made a Member of the Viceroy's Legislative Council.

We need hardly remind our readers, too, of the not inconsiderable grants of money recently made for special and general purposes to the various Sanitary Departments. We have said enough to show that the present attack is singularly ill-timed and could scarcely have been delivered at a time when the Government of India was in a better position to defend themselves.

SIR RONALD ROSS AND THE I M G

OUR readers may remember that in our issue of April 1911, page 156, there appeared in connection with a review of Sir Ronald Ross' book on *Malaria* some remarks, to which Sir Ronald has taken exception as reflecting on his character as a scientific man and a man of honour.

We very much regret that the paragraphs objected to were ever allowed to appear in these pages, and we beg to offer our sincere apologies to Sir Ronald Ross for their appearance.

Sir Ronald also has objected to our not having published a letter received from Lieutenant-Colonel Henry Smith, I M S, who called our attention to the fact that such remarks should not be made anonymously and that the writer should give his name. We at once communicated with the writer who immediately allowed his name to be published, as may be seen by a reference to our columns (May 1911, p 187). This letter has long been lost, but at the time we stated and we still believe that it contained nothing beyond a statement to the effect that the writer should give his name. This having been done, we did not think it necessary to publish the letter itself, and not having the letter we cannot do so now.

We are very sorry to have offended Sir Ronald in this matter. We may not always agree with

him as to the ease or applicability to Indian conditions of the antimalarial measures he so strenuously advocates, but we have never been behindhand in recognising his great ability and energy, and we have always been proud of the repute that his career and his work have conferred on his brother officers of the Indian Medical Service.

Current Topics

GOVERNMENT MEDICAL SCHOOL, RANGOON For 1910-1911

THE year commenced with twenty-nine students on the rolls, thirteen in the first year, and sixteen in the second year class. Of these twenty received stipends from Government and nine were private students.

Both the first and second year students had their annual examination at the end of March and all except two belonging to the second year passed and were promoted to the second and third year classes respectively.

Nineteen new students were admitted in July and began their first year's course of study. Of these ten were public and nine private,—three of the latter being Burmans—a fact worthy of notice, as it shows the school is becoming more popular among this nationality. The ten public students were also all Burmans or those domiciled in Burma, and many applications for scholarship from eligible Burmese lads had to be refused. Among the new admissions there was not one who had the required educational qualification, *i.e.*, the matriculation or High School Final Examination, the majority had passed only the seventh standard.

The attendance and progress of the students during the year were satisfactory.

COMBINED HOSPITAL SYSTEM INDIAN ARMY

WITH the approval of the Most Hon'ble the Secretary of State for India, the Government of India sanction, with effect from the 13th August 1912, the grant of a subordinate charge allowance to the Sub-Assistant Surgeon of the Indian Subordinate Medical Department in charge of the Central Store and Office of the Senior Medical Officer, Indian Medical Service, at all stations where the combined hospital system for Indian troops has been introduced, such allowance to be on a sliding scale of Rs 5 per mensem for each Indian Cavalry or Infantry unit in the station, subject to a maximum of Rs 20 per mensem.

The extra cost involved is estimated at Rs 7,800 per annum as shown in the attached statement. The expenditure during the current financial year should be met from existing

provision in the estimates under the grant and head of account affected or by re-appropriation if necessary

Statement showing the stations at which the combined hospital system has been introduced, the number of Indian fighting units in the station, the allowance admissible, and the total extra cost involved

Stations at which combined hospital system has been established	Number of Indian fighting* units	Cost per mensem	Cost per annum	REMARKS
		Rs	Rs	
Drosh	1	5	60	
Malakand	1	5	60	
Nowshera	4	20	240	
Risalpur	2	10	120	
Peshawar	4	20	240	
Abbottabad	3	15	180	
Jhelum	5	20	240	
Rawalpindi	3	15	180	
Sialkot	3	15	180	
Ambala	3	15	180	
Bakloh	2	10	120	
Dhamsala	2	10	120	
Ferozepore	2	10	120	
Jullundur	3	15	180	
Lahore Cantonment	3	15	180	
Multan	3	15	180	
Chaman	1	5	60	
Loralai	2	10	120	
Quetta	7	20	240	
Jhansi	4	20	240	
Jubbulpore	3	15	180	
Mhow	2	10	120	
Nasirabad	1	5	60	
Saugor	2	10	120	
Ahmednagar	2	10	120	
Aurangabad	3	15	180	
Belgaum	3	15	180	
Kolko	1	5	60	
Poona	4	20	240	
Bailey	2	10	120	
Dehra Dun	4	20	240	
Delhi	2	10	120	
Lansdowne	2	20	240	
Meerut	3	15	180	
Alipore (Calcutta)	2	10	120	
Allahabad	2	10	120	
Cawnpore	2	10	120	
Fyzabad	2	10	120	
Lucknow	3	15	180	
Bangalore	4	20	240	
Bolai um	2	10	120	
Secundorabad	6	20	240	
Bhamo	1	5	60	
Mandalay	2	10	120	
Maymyo	1	5	60	
Rangoon	2	10	120	
Kohat	4	20	240	
Dera Ismail Khan	4	20	240	
Bannu	4	20	240	
Aden	1	5	60	
Total		650	7,800	

* The term Indian fighting unit as herein used includes only Indian Cavalry and Infantry

INDIGENOUS FISH AND MOSQUITO LARVÆ

MAJOR A B FRY, I M S, has a most important and interesting article on the above subject in the September number of *Paludism*. We give the following extensive extract—

Lower Bengal abounds in collections of permanent water which are all potential breeding places for mosquitos. One is not surprised at a large mosquito population but rather astounded at its moderate numbers. Were it not for their natural enemies I believe that

mosquitos would render this part of the country uninhabitable

These permanent waters are rivers, flowing or stagnant, tanks for bathing and for drinking water, borrow pits for roads and railway embankments, swamps, natural ponds and lakes and artificial hollows created by removal of soil for building purposes

All these waters, if permanent, that is, are never dry at any season of the year, contain fish. These fish are numerous and play an important part in keeping down the mosquito population

The following is a list of the commonest larva-eating species of fish found in the fresh waters of Bengal—

Haplochilus	panchax
"	melastigma
Ambassis	nama
"	ranga
Anabas	scandens
Barbus	ticto and other species
Trichogaster	several species

The commonest I have met with is *Haplochilus panchax* which abounds in all the dead rivers and swamps. After stirring up a patch of weedy swamp I have watched the arrival of *Haplochilus* and seen them seize exposed larvæ. I have noted that larvæ have learnt to protect themselves. A very common larva in these dead rivers is *M. nigerimus*. They are seen to vary much in colour, being black with white spots, brown, grey and brilliant green. This is probably protective colouring, but I note that if full grown they do not change colour in a new environment. In nature they wriggle on to the surface of partially submerged plants or lie parallel to a blade of grass. When frightened they assume an S-shape, remaining motionless, allow themselves to sink. Dr Chowdhury tells me that *Haplochilus* will not touch a dead larva and possibly this may be a trick of shamming dead.

I have records of several hundred tanks and borrow pits and my experience is as follows—

Assuming in all cases that the water is permanent—

1 If free of weed and with clean cut sides without grass or bush and with no shelving mud flats they are always free of larvæ

2 If weed is excessive and thickly matted both culex and anopheline larvæ are numerous

3 If there is but little weed and edges are shelving, anopheline larvæ only are found. The anopheline being a surface resters can wriggle into shallows where the culex cannot exist. This, I believe, accounts for the undoubted comparative scarcity of culex in rural areas of Bengal.

In other words, without adequate protection from fish, mosquito larvæ cannot exist.

This opinion was confirmed by my findings in the Chilka Lake which holds brackish water and is bordered by weedy shallow beaches and mud flats. At certain places on the shore amongst the weed and algae I found anopheline larvæ and nymphs in veritable thousands. This was not constant, many patches of weed were quite free, which I was rather at a loss to explain. Further research showed that anopheline larvæ were always plentiful if the belt of weed was broad and stretched some way from the shore. I noted that the daily breeze blew any narrow fringe of weed on the sandy beach and so exposed larvæ to the attacks of the numerous small fish. The broad belts of weed resisted the action of wind and wave.

The practical points I would venture to indicate are—

(1) That indigenous fish are numerous enough to deal with mosquito larvæ and the importation of foreign species, such as Barbados millions, is unnecessary.

(2) That tanks—(which abound in every village and which are necessary evils, for the Bengali maintains that water from the lower sand is unwholesome and will not use wells)—can be rendered innocuous by keeping the edges clean and steep cut and removing weed.

(3) That discretion be used in recommending the use of larvicides which may only kill off the fish

(4) That we should recognize that earth, whether for railways, roads or houses, has to be taken from some where handy, and borrow pits must be accepted as necessary but the unimproved areas should be to make them large and deep so that they can never become dry and thus kill off the fish. Moreover, those responsible for their creation should be forced by law to maintain them so that they do not degenerate into buffalo wallows or weedy swamps

An elaboration of this idea suggests itself as suited for big schemes, such as railway construction, and that is to construct a central large and deep pit and to extend a series up and down the line, each one shallower than the last, connecting them so that each series might drain to the common centre. I think a central borrow pit six feet deep would allow five subsidiary pits on either side, and the system could be repeated as often as necessary. I think too, that railway companies should be made to appoint a whole time executive officer and staff to attend to borrow pits and keep them in a sanitary condition

CALCUTTA VITAL STATISTICS

The Health Officer of Calcutta in discussing the birth-rate and infant mortality of the people of Calcutta gives the following interesting information —

It is not only satisfactory to be able to record an increase in the general birth-rate but also an increase in each district. We find also that nearly every ward in the City shows an increase. This is proof that the present system of registration of births is an advance on any previously adopted. The still-births amounted to 1,216 as compared with 1,033 in the previous year — these however are not reckoned as births

The birth rates amongst the different classes are as follows —

Hindus	13,367 births, a rate of 21.9 per 1,000
Mahomedans	4,957 " " 20.5 " "
Non-Asiatics	236 " " 17.6 " "
Mixed	463 " " 32.6 " "
Other classes	492 " " 27.6 " "

These are all higher rates than those of the previous year

INFANTILE MORTALITY

There were 4,911 deaths of infants during the year, giving a rate on the total of registered births of 251 per 1,000. This is the lowest rate for over 20 years. This compares favourably with the rate of 273 per 1,000 during the previous year. The difference in the rate however is brought about not by a diminution of infant deaths, which were 232 in excess, but by the large increase of registered births. Last year, as I pointed out, registration of births was defective

The infantile death rate is much the same in each district. The lower rate for District II being brought about by the satisfactory returns from the Medical College and the Lady Dufferin Hospitals, and the higher rate for District III being due to the large number of infants which die in the Campbell Hospital

The wards, however, differ considerably

Ward 5	391 per 1,000
" 2	317 " "
" 7	324 " "
" 13	374 " "
" 24	309 " "
" 25	357 " "

These are better than for last year but still terribly high

The rate of mortality for infants under 7 days' old is 93 per 1,000 registered births. This is an improvement on last year (107) but shows that a large part is due to

ignorance and neglect. The death rate amongst infants under 7 days of women attended by the midwives was only 58 per 1,000

According to nationality the infantile death rates were —

Hindus	240 per 1,000
Mahomedans	298 " "
Non Asiatics	173 " "
Mixed	224 " "
Other classes	146 " "

As the birth rate amongst Mahomedans was 73 per 1,000 females as against 66 per 1,000 females of the Hindu community, the higher rate of infantile mortality amongst Mahomedans (298 per 1,000) is not explained by deficient registration of births. The better registration of births has apparently lowered the rate of infant mortality amongst both classes, but the higher rate amongst Mahomedans can only be explained by greater carelessness and neglect. The mortality amongst infants is considerably greater in the latter half of the year (July to December)

THE SEMI CIRCULAR CANALS AND THE SENSE OF POSITION, OR ORIENTATION

The *Proceedings of the Royal Society of Medicine* publishes an article on the above curious and out-of-the-ordinary-line topic from the pen of Dr. Dan McKenzie. The author's attention was drawn to this subject by observations made on the conditions found by him to obtain in certain patients who had become deaf, or nearly so, from middle ear disease. Two such cases he describes in which the patients complained of a loss of the sense of position since the onset of deafness. On considering the cause of the symptoms Dr. McKenzie came to the conclusion that some interference with the vestibular organ, which is known frequently to accompany serious labyrinth or auditory nerve lesions, must be regarded as the most plausible explanation. In order to elucidate the problem he carried out a series of investigations on animals and man, of which the following is a brief résumé —

The sense of position or orientation, in man, obviously depends upon sensations received not from one, but from several sense organs. The most important is undoubtedly vision, the next is, probably, the muscular or kinesthetic (sensation of movement) sense — if we may call it a sense (Occasionally hearing and even smell may be employed, but for ordinary purposes, in man, in all events, they may be neglected). Knowing what we do of the vestibular sense and of its reflex effect upon muscle tonus, together with its preponderant influence, under normal conditions, upon equilibration, we might expect that vestibular stimuli, also, would add to the sum of impressions upon which is formed the judgment as to our position relative to the outer world. In other words, arguing, *a priori*, our sense of orientation, under normal conditions, must depend to some extent upon stimuli set up in the semi circular canals by turning movements of the head and body

The question we are debating, then, may be enunciated as follows: Does the memory (conscious or subconscious registration) of turning movements influence the judgment in forming its conception of our orientation towards objects, near or distant? And if it does, are the direction and extent of the turning estimated by the vestibular sense as well as by the muscular sense?

After describing some most interesting experiments on orientation in the lower animals, and

particularly, on birds, Dr McKenzie sums up the evidence afforded by the literature of this subject by saying that (a) visual memories play an important part, but that (b) they do not play the sole part in directing the homing course of animals. Indeed, that visual guidance probably plays a subsidiary part is made evident by the observation of Herr Gatzke which go to show that migratory birds travel by night at a height of 12,000 feet above the earth's surface, and that they cover great distances in a single flight.

With regard to the sense of position or orientation in man the author makes the following observations and deduction from his experiments —

Most people will agree that the powers of orientation vary very much in degree in normal human individuals. And this is borne out by my experiments. Further, as far as conscious self analysis is concerned, the sense of position would seem to depend upon the results of a combination of visual, tactile (or kinæsthetic), and perhaps also vestibular impressions. That we rely largely, and even in some people exclusively, upon visual observation is proved by the familiar fact that in places where a sameness of visual objects occurs (in Tube stations, circular rooms &c.), we readily lose our sense of position, the loss being accompanied by a curious feeling of detachment and bewilderment almost amounting to vertigo. At the same time there are many individuals, even in civilized communities, whose sense of position is almost or entirely independent of vision. Such people are seldom or never at a loss even in strange localities, and at night or in fog and mist.

To turn now to the experiments bearing upon the sense of position in man. The object I had in my mind was to ascertain, if possible, whether or not the vestibular organs exercise any influence upon our sense of position. The difficulty was to devise an experiment which would exclude, or minimize, the influence of the other senses, and more particularly the muscular sense. We have already seen that the muscular sense must be at its lowest point of activity in the flying of birds, and the nearest approach to birds' flight in the case of a man is the act of swimming. In this connexion James's interesting statement may be recalled, as to the difficulty deaf mutes experience in orientating when swimming under water. The experiment of blind folding deaf mutes in whom the vestibular sense is inactive should be repeated, as doubt has been thrown upon James' statement. In swimming, stimuli from tactile and kinæsthetic sources must be practically in abeyance, and I imagine that swimming experiments upon deaf mutes would be crucial so far as information upon the part played by the vestibular organs in orientation is concerned. Experiments such as these being inapplicable, I carried some out upon people standing and walking, and in them, therefore, the muscle sense could not be eliminated. But by testing people in whom rotation and the caloric tests showed the vestibular sense to be defective or absent, and comparing them with the normal, I tried to determine whether or not the muscle sense was influenced by sensations derived from the semi circular canals.

The experiments are carried out as follows. A large quiet room is selected and the subject, carefully blindfolded, is made to advance to an object placed 16 ft in front of him, and the deviation to one or other side is noted. (The normal shortness of one leg compared with the other is insufficient to interfere with the test.) The subject then returns to the original standing place and is made to execute turning movements, and after each turn he again walks toward the distant object, and the deviations are noted. Thus he takes a quarter, a half, and a complete turn to the right and to the left

respectively. Having examined a number of normal individuals in this way, I proceeded to carry out the same experiments upon people in whom the usual tests showed the vestibular system to be more or less impaired. Twenty-two people in all were tested—nine normal, nine with an impaired vestibular system, and four in whom no response to the vestibular tests could be evoked. The results were not altogether definite, as might perhaps have been expected. To begin with, considerable variation was found in normal individuals. After complete turns, for example (executed slowly so as to avoid vertigo), deviations of 4, 12 and even 18 ft were noted. People with a naturally keen sense of direction responded most accurately. Variations in the same individual at different times were also found, but not to any very striking extent. In people whose vestibular system was impaired, but not altogether inactive, a similar latitude of variation was found, but these people, almost without exception, showed wider deviations than normal individuals did, and several were incapable of making complete turns. In the four patients with entire absence of vestibular response and, of course, with complete deafness, one showed considerable deviation (20 ft to right after "complete turn" to left, and 14 ft to left after "complete turn" to right), but two of the others responded like normal individuals, very much to my surprise.

The number tested is, of course, too scanty to permit of anything more than an impression. But the difference between the "normal" and the "impaired" cases is, I think, sufficiently striking to justify us in holding that canalicular stimuli do influence our sense of position. It is probable, however, from my results in cases with absence of vestibular response, that these stimuli are dispensable and that the nervous system can accustom itself to their absence. The great errors made by patients with "impaired" vestibular reaction may possibly be due to the passage of irregular stimuli from the canals to the nerve-centres. It is obvious that the movement when stimuli from the canals will chiefly be relied upon will be when the subject is sitting or lying still with closed eyes. In normal individuals the constant or almost constant flow of stimuli from the canals will on such occasions serve to keep the sense of orientation awake or active. But in people with defective or absent vestibular systems the absence of this constant and regular stimulus, slight though it may be, will, when the visual and kinæsthetic sensations are in abeyance, produce the sense of bewilderment or confusion which attends the loss of orientation. In this way we may explain the symptom experienced by Mr MacLeod Yearsley's case reported in the *Lancet*, of February 17, 1912, as well as of the feeling of loss of the sense of position in the two cases I alluded to in the introduction to this paper. Obviously, the symptom may be found in cases both of complete and incomplete vestibular destruction, but in the former it will probably tend to disappear.

PLAGUE DRIVING IN THE PEGU DIVISION DURING THE PLAGUE SEASONS 1909-10, 1910-11 AND 1911-12, BY CAPTAIN W F BRAYNE, B A, M B, I M S

WE are in receipt of these two very valuable reports on the operations carried out under the directions of Captain Brayne with a view to decrease or stop entirely the plague infections in the Pegu Division.

The measures adopted, rat driving, rat killing, etc., would appear from the first of these reports to have been accompanied with a good measure of success and the staff are to be congratulated on the zeal and ability exhibited in the difficult

task placed before them Captain Brayne's final conclusions are —

The Prome to Thônzé area which is 100 miles in length containing 13 towns has every season since plague appeared in the country experienced severe plague in most of its towns up to 1909-10

In this area during 1910-11 there was a drop of 9.21 per mille in the death-rate from all causes *minus* reported cholera and small pox and a drop of 4.70 per mille in the death-rate from reported plague below the previous death rate since plague first began

There was no such similar drop in mortality either in the Plague Towns or in the non Plague Towns in the rest of Burma

From a consideration of the above and an analysis of the figures of each individual town separately it is evident that no other possible cause can be assigned for this drop in mortality other than the plague measures carried out in the area

The second report describes further work carried out on similar lines, but with the following modifications of and additions to the measures employed —

I Drives as in former years

(a) *Search parties* — On a case of plague occurring in a non infected area or town, a few coolies are collected locally by the officer sent to investigate the case, and a rapid search is made in the houses in the vicinity of the case for dead rats. A proper drive is not attempted, but boxes are removed, firewood turned over, and the houses rapidly searched. This is also sometimes done in the food bazaar. Any live rats seen are killed, and if any dead rats are found, spleen smears are taken from all rats whether killed or found dead, but no attempt is made to drive the houses. The object is to search as many houses as possible in the day using untrained local coolies

In this way very valuable information of rat infection has been obtained, in many cases at a much earlier date than would have been possible by moving in the trained gangs and driving

(b) *Torches* — Flaming torches, made by tying a piece of sacking soaked in earth oil on an iron stake, are used for dislodging rats from corrugated iron, tile and shingle roofs. The flaming torch is rapidly passed over all likely corners and hiding places. This is found to be a much more effectual method of bolting the rats than beating and no damage is done to the roof such as is apt to occur when it is beaten by coolies

Stringent rules have been framed to prevent careless use of the torch, and careful precautions are taken to prevent fire. With each torch a powerful Hydionette syringe and a bucket of water are kept ready for use, so fire is practically impossible. This method has now been in use for the whole season 1911-12, and no case of damage has occurred from its use

(c) *Flooding* — In order to avoid the great labour and expense entailed by smoking and digging out large colonies of *Nesokia Bengalensis* under godowns and other buildings, wherever the natural lie of the land is favourable during the monsoon, these buildings have been flooded by the construction of small dams and the diverting of a watercourse, or pumping in water

This is an excellent method as all rats which do not come out are drowned, and it is perfectly certain that the last rat in the building has been destroyed

In Letpadan in one godown 278 rats, of which 198 were *Nesokia Bengalensis*, were obtained in one morning by this means

(d) When rat plague is found to be present in any town the following procedure if the circumstances admit of its adoption, has been found to be very efficacious in cutting short the infection —

(1) Drive the market and any other distributing centre

(2) Begin a drive in the healthy rat area beyond the spreading edge of the infection, and drive back in line towards and then over the infected area.

(3) The whole quarter of the town in which infection was found is then driven, in the case of a small town the whole town is driven

II Trapping on the trapping square system as described in previous reports

III *Building Improvement* — Building Improvement schemes were carried out in Prome and Paungde during 1910-11

The successful results of Captain Brayne's endeavours to combat plague cannot be better exemplified than by some extracts from his statement as to the attitude of the people with regard to his measures

(a) The vast majority of the people in the Prome to Thônzé area at any rate thoroughly realise that they owe their immunity from plague to the driving

When plague is present in a town we are continually asked by people of the educated classes to come and drive their houses because they have found dead rats, and on several occasions when while driving an infected area some houses were omitted by mistake, the owners have come and asked why their houses were not being driven

The preventive drive when plague is not present in the town is still regarded by the people as a hardship, as they do not understand the principle of taking precautions ahead

When plague, however, is present the people help us in every possible way, and are as keen on seeing the last rat caught as we are

Owing to this co-operation of the people we were able, during 1911-12, to obtain information as soon as rat plague began in several towns and to begin driving before the first human case occurred

The attitude of the people to the work may be put briefly as follows

They do not like it any more than we like dentistry, but when plague is present they would not like to be left without it

(b) When the work began a great amount of damage was done to houses, as the low floors had to be removed, corners opened, ceilings opened, etc. The work also was very heavy at first owing to the amount of dismantling, etc., which had to be done

Now, however, every house in the Prome to Thônzé area, and the majority in the Pegu area, have been either rebuilt or so altered by their owners that driving can now be done without any damage whatever to most of the houses

The use of torches and syringes has now obviated the unavoidable damage to roofs which used to occur when all roofs were beaten to dislodge the rats.

The only damage now done is where rats have burrowed in a floor that has been made of bad materials, and this does not occur where we have been able to obtain engineering supervision for the work of rebuilding

The people, therefore, in these areas have spent many lakhs of rupees in altering their houses so that efficient driving may be done. They are now reaping their reward, as a drive at present causes no more inconvenience than a spring cleaning in Europe, and the majority of the towns have been free from plague for two years

The work carried out by Captain Brayne and his staff is worthy of the closest attention on the part of plague officers in those parts of India where the infection still rages in epidemic form yearly. His work is most valuable and, so

far as a general conclusion can be drawn from it, the success, met with in stopping epidemics by killing off or destroying rats, is largely in favour of the rat-flea theory of infection

PUBLICATIONS TO BE ISSUED BY THE TROPICAL DISEASES BUREAU

In November the Tropical Diseases Bureau, which replaced the Sleeping Sickness Bureau on July 1st, will commence the publication of the *Tropical Diseases Bulletin*. The tropical and sub-tropical diseases of man will be grouped in Sections, which will be in charge of the following Sectional Editors—Fleet-Surgeon P W Bassett-Smith, CB, Lt-Col C Burt, R A M C, Dr W Carnegie Brown, Prof George Dean, Dr H B Fantham, Dr Edward Hindle, Dr R T Leiper, Dr David Thomson, Dr C M Wenyon. Groups will be taken also by the Director and Assistant Director. The Bulletin will be under the general editorship of the Director.

Each number will consist of about fifty pages containing classified summaries of the current literature of the tropical diseases, they will appear as a rule twice a month. The annual subscription price will be one guinea post free, single numbers 1/6. Orders and subscriptions should not be sent to the Bureau but to the agents, Messrs Baillière Tindall & Cox, 8, Henrietta Street, Covent Garden, W C.

The tropical diseases of animals will be treated in a separate publication, the *Tropical Veterinary Bulletin*. This will appear quarterly from October, and will be in charge of Mr A Leslie Sheather, BSc, MRCVS, of the Royal Veterinary College, London. For this the annual subscription price will be 10/0, single copies 3/0. Orders and subscriptions to be sent to Messrs Baillière, Tindall & Cox as above.

The Honorary Managing Committee and Staff of the Bureau are as follows—

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CORPUS LUTEUM EXTRACT

Burnam in the current issue of the *Journal of the American Medical Association* publishes a most interesting article on the above subject—the whole article and the discussion that followed its delivery being well worthy of close perusal.

Claude Bernard was the first to attribute to the ovary the function of elaborating an internal secretion. It is now fully established that the ovary does furnish a secretion which induces menstruation, maintains pregnancy during the early months, exercises a potent influence in the development of the individual, determines all the secondary sexual characters, *ie*, the development of the breasts, the uterine, etc., and maintains with the other internal secretory glands an important trophic influence on the bones, the fatty tissues and the general metabolism.

The first to suggest that the corpus luteum is the part of the ovary concerned with internal secretion was Gustav Born, while to L Fraenkel is due the credit of establishing firmly on an experimental basis that the corpus luteum is a most important secretory gland, and probably represents the principal source of the internal secretion of the entire ovary. He showed in rabbits that the maintenance of pregnancy during its first half depends on the integrity of the corpora lutea. In woman he demonstrated that removal of all luteum tissue is followed by a failure of the next menstrual period to appear. According to Fraenkel, the fresh corpus begins to form nineteen days after the commencement of the last menstruation, reaches its height with the beginning of the next, and then gradually retrogresses, so that at its end lutean tissue has almost entirely disappeared.

Other experimentors have sought to establish the undoubted relationship that exists between the corpus luteum and other internal secretory glands.

Every clinician now recognizes that disturbances in the pituitary, the thyroid, the adrenals and the pancreas are often followed by upsets in the ovarian function. Different observers have shown experimentally that removal of the corpora lutea causes definite histological changes in the pituitary, the thyroid and suprarenals, and conversely, definite changes in the ovaries have been noted after extirpation of hypophysis, pancreas and thyroid glands.

It would seem that the internal secretion of the ovary plays a rôle in the development and metabolism of woman only during that period which begins a few years before puberty and extends to a few years after the menopause.

Entire absence of the secretion in the years just before and during puberty leads to a failure in the development of the girl so affected. The uterus and other genital organs remain small and infantile. The mammary glands do not develop. The pelvic bones maintain more resemblance to the male than to the normal female type, and there may be complete or partial failure of pubic and axillary hair development.

Such extreme cases are, of course, exceptional, but various lesser degrees of insufficiency are common. Some show the general anatomic secondary sexual characteristics, but are abnormally slow in developing, and menstruation is usually greatly altered, *ie*, it may not appear at all, may return at irregular intervals, or be associated with extreme dysmenorrhœa, or with severe anæmia. Some not uncommonly show a great increase in the fat of the body, nervous manifestations, while not so common as those which occur at the time of the menopause, may be most pronounced producing all varieties of neurasthenia and hysteria up to and into definite psychoses.

Normally the change from childhood to adult life is very gradual, but when the new secretion furnished by the ovary begins to exert its influence on metabolism, there is doubtless a readjustment of all the internal secretions to meet the changed conditions, and the greater the irregularity of the ovarian supply the more the disturbance must be.

At the menopause the ovaries cease functioning with the result that menstruation stops, the genital organs atrophy and the influence on metabolism is taken up by other internal secretory glands. This change is progressive and slow, and under ideal conditions it should hardly be noted in the general condition of the patient. This ideal is rarely met with, for during the period before its complete disappearance there is usually marked irregularity in the functioning of the ovaries, with resultant irregularities in menstruation, various functional disturbances of the heart, gastro-intestinal tract, the vascular system and especially of the nervous system.

Similar in every way, but usually more stormy, is the progress of the artificial menopause which follows the operative removal of the ovaries. Not only at the extremes of life, but also during the intervening period many women suffer from insufficiency of ovarian secretion. In some there are periods of amenorrhœa and an accumulation of fat, in some amenorrhœa and nervous phenomena, in some nervous disturbances without any change in menstruation. These symptoms are encountered in some cases with definite evidence of disease of the thyroid, pancreas or pituitary; such, however, constitute a small number compared with those in whom there is no indication of disease outside the ovary.

According to Dr Burnam the indications for the active principle of the internal secretion of the ovary are, therefore, very varied after a very extensive trial of corpus luteum extract in the various conditions outlined above he arrives at the following conclusions —

1 When given by the mouth, corpus luteum tissue of the sow, even in large doses, has little or no toxic effect on woman.

2 It affords us a valuable means of controlling the nervous symptoms which occur in so many patients at the time of the natural or artificial menopause, giving relief to most sufferers.

3 It is a valuable remedy in the treatment of patients with insufficient internal ovarian secretion during menstrual life. This class constitutes a very large number of women.

4 It is an excellent means of inducing menstruation in young women suffering from functional amenorrhœa. Those who are fat, in addition to the re-establishment of menstruation, usually, but not always, lose weight.

5 There would seem to be a possibility for the drug in cases of unexplained sterility and repeated abortions.

Reviews

Hygiene and Public Health—By B. N. GHOSH and J. L. DAS. Hilton & Co., Calcutta, 1912. Price Rs 38.

THIS is an excellent little volume, dedicated to the officers of the I. M. S., and with an Introduction by Colonel Kenneth Macleod, I.M.S. (ret'd).

It is specially written from the point of view of tropical conditions and as such is strongly to be commended. Except for McNally and Cornwall's Sanitary Handbook and Lukis and Blackman's popular Manual, we know of no treatise on general hygiene so specially adapted for use in India. It cannot be expected that a new book on general hygiene can contain much that is original and our authors have freely made use of all recognised authorities. We specially commend the practical and careful chapters on Indian dietetics both for Europeans and for natives of India, and we are glad to see a fair and clear discussion of the subject of Indian diets and physical development. The authors fully recognise the need of supplementing the proteid elements in Indian dietaries, and they recommend for Bengalis a diet consisting of rice 8 oz, *atta* 6 oz, *dal* 4 oz, butter or *ghi* 3 oz, fish 4 oz, vegetables 6 oz, and milk 12 oz. This certainly removes the "poverty of the proteid element" which is the defect in the orthodox Hindu diet.

We can strongly recommend this volume as an admirable text-book for students and practitioners.

Internal Secretion and the Ductless Glands

—By SWALE VINCENT, M.D. (Lond.), etc. Preface by Prof E. A. Schafer, F.R.S. Illustrated. Edward Arnold, London, 1912

THE mere title of this book is sufficient to recall to every reading physician and student of medicine, the immense strides that have been made during the last twenty years in the understanding of the importance of the ductless glands. As Professor Schafer points out, only a few years ago our knowledge of the functions of the ductless glands was a blank, enlivened by all kinds of conjectures, now the subject requires more than 400 pages even for a concise digest of the accumulated facts, and some 3,000 references to deal with the literature. In a few short years an astounding amount of knowledge of these bodies has been piled up, so that their place in the economy is better understood than that of some organs, the functions of which have been the object of investigation ever since physiology established itself as a science.

The work done by Prof Swale Vincent in the production of the present volume has entailed a vast amount of labour in reviewing, selecting, and extracting the literature of the subject scattered over innumerable journals. We have read the chapters on the different ductless glands with the very greatest interest and advantage, and we have very great pleasure in recommending it to all students and practising members of the profession. Four chapters are devoted to what may be looked on as introductory matter, then each of the ductless glands is dealt with in separate chapters—the adrenals and thyroid requiring more than half the volume for their elucidation. The acknowledged importance of the ductless glands in the carrying on of the functions of the different organs and tissues of the body is more than sufficient to ensure a careful perusal of this excellent work by all who have the interests of their patients at heart. For the teacher and science scholars there is an excellent bibliography and index, and the illustrations and general get-up of the book are good, as would be expected from the name of the publishers.

Aids to the Diagnosis and Treatment of Diseases of Children—By JOHN McCaw, M.D. Messrs Baillière, Tindall & Cox, 4th Edition, Price 3s. 6d.

THIS well-known little book on children's diseases has now reached its fourth edition and we can heartily congratulate the author on the success of his former editions and wish him all success in future.

The present edition has been carefully revised and added to, while not a few of the articles have been entirely rewritten. Much new matter has been included and such important subjects as epidemic cerebro-spinal meningitis, mental deficiency, cerebral diplyria, infantile semiplyria and the myopathies, night terrors, and status lymphaticus, now find a place. These additions

greatly enhance the value of the book, and we have no doubt it will be found a very valuable "aid" to the student in acquiring a knowledge of the diagnosis and treatment of diseases of children.

Surgical After-Treatment—By I. R. G. CRANDON, A.M., M.D., and ALBERT EBRENFRIED, A.B., M.D. Second Edition. Pages 831. Illustrations 265. W. B. Saunders Company, Philadelphia and London.

THE first edition of this work appeared in 1910, it was reprinted in the following year and the present work has been largely revised, convincing evidence of its popularity.

The book is divided into two parts, the first of which is general dealing with the conditions and complications which may arise after any operation. It includes chapters on the preparation of the sick room, thirst, pain, hæmorrhage, shock, etc., etc. There are also useful chapters on massage, electro-therapy and preparation of the patient before operation.

The best method of cleansing the skin is considered to be a bath the day before operation, gauze scrubbing with benzine on the operation table followed by painting with tincture of iodine, which is to be allowed to dry for five minutes, gauze wet with Harrington's solution is then placed over the line of the incision for two minutes. The question of shaving *versus* the use of depilatories is also discussed.

The second part deals with operations arranged according to the region in which they are performed.

There is also a very clear and good résumé of vaccine therapy included here by Dr. Sanborn, late an assistant in Sir Almroth Wright's laboratory which gives all the main practical points of this method of treatment.

The book is intended by the authors for two classes of readers, *i.e.*, house surgeons and general practitioners who may at intervals have the after-treatment of surgical cases, it may also be said that men with a considerable surgical experience may add to their knowledge by the perusal of this work. The treatment advised is thoroughly sound, it is perhaps on some points a trifle conservative, but this may be considered a recommendation in the case of those for whom it is intended. The illustrations are good and any house surgeon would be well advised to buy this book.

There are a certain number of references to original work which should prove most useful to any one requiring further information on any particular point, they cover the literature of a good many countries and have been carefully selected. The book fulfils its purpose admirably.

A Text-book of Pathology for Students of Medicine—By J. GEORGE ADAMI and JOHN McCRAE. Macmillan & Co. Price 25s. nett.

THIS is a work of some 700 pages with 304 engravings and 11 coloured plates. In the pre-

ace the authors state that it has been written in accordance with an agreement made with the publishers before the publication of the large two-volume book on the Principles of Pathology by Professor Adams, and that it is not simply a lengthy excerpt from that work, but rather a selection and dwelling in what they regard as most important for the student, while most of the illustrations are original. It is divided into two nearly equal parts, the first being devoted to general and the second to special and systematic pathology. The former is especially good, as might be expected from anyone acquainted with the author's previous writings, the sections on immunity and on tumours being the best. The headings of sections and special terms are in thick type and the special point of a paragraph is often emphasized by italics, which enables the most important facts to be readily grasped. The illustrations are good, being mainly drawings of specimens in the McGill University Museum.

The systematic part also contains a good selection of material which should amply suffice for students for the ordinary qualification examinations. As the authors state in their preface with regard to this portion of the work, they have endeavoured first and foremost to make clear and intelligible what is known concerning the deeper meaning of morbid states, and have not hesitated to sacrifice lists of data and their names, although they have been less successful in this in the sections on genito-urinary and skin diseases than in the other parts.

On turning to the descriptions of tropical diseases we find a good brief account of malarial parasites with a plate illustrating unstained specimens, which do not bring out their structure as well as the Romanosky method does. On the other hand, intestinal worms, which are so important in India, are not described, while we can find no mention of cholera and only a line on kala-azar, in which it is stated that the parasite has been proved to a stage of a trypanosome, which is not quite correct. Although students' books are not expected to contain much on tropical diseases, it appears to be time that such widely destructive diseases as cholera and kala-azar should not be altogether neglected. On the whole, the book will be most useful for those for whom it has been written, and in the tropics the lecturer will supply the deficiencies regarding diseases of warm climates.

Tropical Medicine and Hygiene Part III Diseases due to bacteria and other vegetable parasites, to dietetic errors and of unknown causation—By C W DANIELS. John Bale, Sons and Danielssen Ltd 1912 7s 6d nett

THIS is the concluding volume of the work on tropical medicine of which the first volume was on diseases due to protozoa by Daniels and Wilkinson and the second on diseases due to metazoa by the first named writer. The present

volume deals with a large number of subjects in about 200 small pages in a somewhat uneven manner. Typhoid is dismissed in 3 pages and cholera in 7, while beri-beri receives 21, and is a good résumé of our present knowledge of the subject, including Fraser and Staunton's important work. The scientific classification adopted has the disadvantage of placing amœbic dysentery in volume I and the bacillary form of the disease in the present one, although the latter article includes a description of the bowel lesions of the former disease, and in it we also find the remarkable statement under the account of anti-dysenteric serum that "the soundest method is to prepare the serum from cultures of the organisms isolated from the patient's stool or blood." Apart from the almost invariable absence of these bacilli from the blood, we were under the impression that it takes several months to prepare such a serum of any strength, so this plan would not be of much use in acute cases, in which the serum treatment is most required. This statement does not appear to be a slip for vaccines, as that treatment of dysentery is mentioned in a different chapter, as of use in chronic cases. In the article on cholera it is stated that in the collapse-stage the patient becomes comatose. Unfortunately this is not the case, for if it were, much suffering would be saved. It is also stated that the cholera organism can be identified by its cultural characters from other vibrios, which is incorrect, and the essential agglutination test for this bacillus is not mentioned. The hypertonic treatment is recommended, but the very important indications for its use derived from observations of the blood pressure and sp gr of the blood are omitted, and this article would be of very little practical use to anyone faced with a severe case of the disease. Injections of morphia are recommended to relieve the cramps, but they are never necessary if transfusion is done and most dangerous on account of their strongly predisposing to hæmia. The articles on plague, leprosy and spire are more complete and accurate. There are also very useful articles on the general principles of prophylaxis as regards water-borne and intestinal diseases and on affections of the skin in the tropics, as well as on diseases directly due to climate, including sun-stroke. Altogether there is much valuable information scattered through this little volume, although it is not quite up to the standard of the two first parts of this important work.

A Streptotrix Isolated from the Spleen of a Leper—By MAJOR W G LISTON and CAPTAIN T S B WILLIAMS, I M S (*Scientific Memoirs*)

THIS piece of research adds one more to the now fairly lengthy list of successful cultures of a very pleomorphic organism from leprosy tissues by Deycke, Kediowsky, Clegg, Rost, Williams, Bayon and others. It is most

noteworthy for the excellent coloured plates with which it is illustrated and the careful description of the various forms of the organism. It was presumably written before the publication of the recent paper by Duval and Wellman suggesting that the pleomorphism is due to there being two different organisms associated together in some cases of leprosy, as this point is not discussed.

Dysentery in the Hazaribagh Central Jail—January 1910—March 1911—By CAPTAIN R. T. WELLS, I.M.S. (*Scientific Memoirs*)

THIS further study of the subject of jail dysentery will be welcomed on account of the great importance of the subject. Its conclusions differ considerably from those arrived at by Major Foister at the Midnapore Jail, whose full report, it is much to be regretted, has never been published, although his paper at the Bombay Congress records his main results. He concluded that most of the dysentery at Midnapore was bacillary in nature, although he also met with the amoebic disease, but the exact proportion of each is not clearly stated. Captain Wells, on the other hand, although working in a drier and cooler climate where a still larger proportion of bacillary cases might have been expected, only succeeded in isolating dysentery bacilli from 4.9 per cent of the 268 cases he examined, while he found motile amoebae, which differed from the saprophytic forms he also describes, in no less than 19.5 per cent or five times as many. In five cases tuberculosis was found on *post mortem*, one of them also showing amoebae, but in the very great majority of the cases, namely, about 70 per cent, he was not able to find the cause, which shows how much there is still to be learnt about this class of disease even after allowing for the frequent difficulty in isolating the causative organism from undoubted cases of chronic bacillary dysentery, which probably accounts for some of his negative results, which are very much higher than those obtained by other members of the Bacteriological Department.

Another important part of this report is the cultivation of non-pathogenic organism from the air, and then occasional presence in the stools, and he agrees with Walker that the true pathogenic entamoeba cannot be cultivated on artificial media, and is distinct morphologically from the aërial and water non-pathogenic forms, some of which he figures in the plates in the report. The work is a careful and painstaking investigation, but it is very clear that the subject is much in want of further elucidation.

The Development of the Parasite of Indian Kala Azar—By CAPTAIN W. S. PATTON, I.M.S. (*Scientific Memoirs*)

THE writer, having again been placed on special duty to investigate this important subject, has continued his experiments on the

feeding bugs on patients showing the parasite in this peripheral blood, and has discovered the cause of the very limited and infrequent success in his former lengthy work at this point to be, that if one of these insects are fed a second time on blood, any development which has already taken place in its intestinal tract is at once put a stop to by the action of the fresh supply of blood. On avoiding this source of fallacy he has obtained much more complete and numerous developmental forms in the bugs, and now describes what he considers to be the post-flagellate stage of the organism, in which it loses its flagellum and once more reverts to the small oval form, but with much less blue staining of its protoplasm than in the early stages of the pre-flagellate growth. This post-flagellate form is probably the source of infection in man, and he thinks that this is brought about by regurgitation of the organism from the intestine when the bug bites a fresh subject. The importance of this further stage in the life-history of the organism is that it opens up the possibility of research on the transmission of the infection, now that French workers in Algiers have shown that the infantile form of kala-azar can be transmitted to several species of animals. This memoir is illustrated by an excellent plate showing numerous forms of the development of the organism.

Sight Testing for the General Practitioner—By F. DAVIDSON, 1912. Price 2s 6d.

THIS little volume on sight testing has now reached its fifth edition and would therefore appear popular with the practitioner. The author lays great stress on the importance of the general practitioner including, in his daily work, that of refraction and the prescription of glasses to his patients direct. The author undertakes in his book to teach a simple sound method of both subjective and objective testing. This claim he has undoubtedly substantiated, and the practitioner who has thoroughly mastered what he advises should have no difficulty in carrying out the necessary tests and in advising patients with regard to any correction of vision necessary.

The Nurse's Complete Medical Dictionary—By M. I. BRYAN. Messrs Baillière, Tindall and Cox, 1912.

THIS little book, which has been compiled with the purpose of giving the nursing profession of to-day a complete vocabulary of the terms a nurse is likely to meet in her daily work, will be found exceedingly useful and should supply a distinct want. The pronunciation is given, together with sufficient explanation to make the terms intelligible to all. Under the different diseases the chief symptoms have been noted, but no treatment has been described. We have no doubt this useful book will find a ready sale as it is just what is wanted by young nurses when they begin their training.

Occasional Papers on the Prevention of some common Diseases in Childhood.—

By I. SIM WALLACE, D.Sc., M.D., L.D.S. Messrs. Baillière, Tindall and Cox, 1912. Price 3s 6d net.

THIS volume is a collection of the author's papers that have appeared from time to time in various medical and dental journals. Dr. Wallace, as is well known, holds very marked views as to the effects of diet, particularly in childhood, on the tooth. His views are very generally accepted by most medical men who have any knowledge of his work. The collection of the scattered papers into the present volume is an effort to catch those writers and members of the medical profession who have so far escaped acquaintance with the work that has been done on the subject. We had the pleasure of reviewing a short time ago the author's book on the Prevention of Dental Caries, and so far as we are concerned, we are in entire agreement with the views he holds. These occasional papers are well worthy perusal, and their digestion and assimilation will well repay the practitioner. We think the author is, perhaps, a trifle too pessimistic when he seemingly endorses the view "that the main barrier to reform will be the medical schools and textbooks." Anyone with a passing knowledge of the work inside the walls of any teaching hospital would know that very great importance is attached to the care of the mouth and teeth in the treatment of diseased conditions. We are in a position to recommend this little volume very strongly to the profession in India.

The Treatment of Diseases of the Skin.—

By W. K. SIBLEY, M.A., M.D. Edward Arnold, 1912.

THIS, though, comparatively speaking, a small book, is one that will be found to be exceedingly popular with students and practitioners. It is handy, practical, and thoroughly up-to-date. It gives in a concise and clean-cut form the new methods of local treatment that have completely revolutionized our ideas on the proper care of skin lesions. Information will be found on the various electrical methods, such as X-rays, electrolysis, galvanism, cataphoresis, high frequency currents, and faradic currents. The application of the solid or ether carbon dioxide snow, the effects of radium, have also been experimented with and their effects, methods of use, etc., discussed.

Everyone knows that in recent years great advances have been made in the treatment of skin diseases, but it is only on reading through a new book of this sort that the full significance of the advances is brought home to one. The ease, painlessness and beauty of results that can be now obtained by physico-therapeutic agents, where previously the cautery, caustic, or painful and disfiguring surgical operation was the only remedy, shows what giant strides have been made in this branch of the healing art. The part dealing with the methods of treatment is most

interesting, and the only criticism we can make is one of the nature of a compliment to the author—we wish it were more detailed. This small volume should appeal to the medical profession and we have no doubt but that it will become most popular as its merits become known.

Materia Medica and Pharmacy for Medical Students with an Appendix on Incompatibility.—

By R. R. BENNETT, B.Sc., F.I.C. Second Edition. H. K. Lewis, London, 1912.

FOUR years ago this little book was written in response to a request from students of University College Hospital for a book that would present a concise account of the drugs, chemicals and preparations of the British Pharmacopœia, with such diagnostic characters as are of importance in their recognition. That the author has succeeded in attaining his aim no one who knows this little volume will deny. In this new edition a few extra notes upon plant constituents have been added and the important appendix dealing with the general principles of incompatibility has been extended. The volume is a valuable one to students preparing for examination in the subject.

Surgical Clinics of JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago.

THE second and third numbers of these clinics are interesting and instructive. The subjects treated are varied. Besides bone and joint surgery which take up a fair portion of these numbers, abdominal surgery, the nervous system, renal surgery, gætre, salivarian, etc., have been treated. "Five diagnostic methods" will be found useful. The cases have been followed up in their different stages. The pre-operative and post-operative conditions and the end-results have in many cases been illustrated by photographs and skingrams. The illustrations are good. The essentially practical way and the clear discursive style in which Dr. Murphy deals with the subjects makes his clinics particularly attractive.

Collected Papers.—By the Staff of St. Mary's Hospital, Mayo Clinics. 1911.

THE 1911 number of Mayo Clinics is in keeping with the high standard of reputation which it enjoys. The opportunities for clinical observation at St. Mary's Hospital are unique. Reading through the chapters one can see that the members of the Staff draw their material from the study of an enormous number of cases. The contributors have taken endless pains in collecting the materials and classifying and arranging them. The conclusions drawn from these, based on clinical and operative results and on experimental data, are convincing. The papers contributed on the alimentary canal are good, especially those on gastro-intestinal surgery. There are some interesting papers on cancer of the breast, surgery of the kidneys, and the ureters and on the prostate.

A study of the radiographic diagnostic methods in renal and allied surgery is instructive. The greater part of this number is devoted to these. There is also good reading material in the other chapters, *viz*, on ventral hernia, gonitis and surgical technique. There is a good deal of new material in the number. The illustrations and the skiagrams are extremely good and the get-up of the whole book is as good as can be desired.

The Clinical Pathology of Syphilis and Parasyphilis and its value for Diagnosis and Controlling Treatment—By H. W. BAYLY M.A., M.R.O.S. Messrs Bailière, Tindall & Cox, London, 1912. Price 3/.

THIS will be found a very useful little book by the practitioner and senior medical student. The author has collected the essential points in the clinical pathology of syphilis and parasyphilis, and presents them in such a manner as to emphasize their practical value for diagnosis and treatment.

Theory has been omitted as far as possible, as have also detailed accounts of research and experimental work.

Syphilis at the present time furnishes a brilliant example of the value of the scientific use of the imagination and of modern methods of research in the elucidation of the etiology of a disease and in the discovery of means of diagnosis and treatment.

Thus the discovery by Rouse and Metchnikoff that syphilis could be transferred to lower animals and thus could be subjected to experimental conditions was quickly followed by the isolation of its cause—the *spirochæta pallida*.

This disease also furnishes an example of the deliberate experimental search for a drug which, while harmless to the patient, should be capable of destroying the causal organism, a search which ended in the discovery of Salvarsan and its successor, Neo-Salvarsan. As the literature of the subject is enormous, the present little volume is an effort to sift the wheat from the chaff, and give prominence to those observations that are of practical importance and their application to treatment. The book fulfils its function in a manner worthy of the greatest commendation, and we have much pleasure in recommending it to the profession in India.

Scientific Memoirs No. 52A. The Physiological Action of Certain Drugs in Tablet Form—By Major H. M. MACKENZIE, I.M.S. (Edited by the Director-General, I.M.S.)

MAJOR MACKENZIE took advantage of his appointment as officiating Professor of Physiology in the Medical College, Calcutta, to carry out a very important original piece of work on the above subject. The research was directed towards ascertaining whether the drugs, which are made up in tablet form for Field Hospitals, deteriorate with age, and, if deterioration occurs, to what extent the physiological action of the drug is affected.

In carrying out the investigations on animals and man, Major Mackenzie took care in every case to test the drug against an identical solution or suspension of either fresh drug or fresh tablet and compare the action of the two—thus ensuring a perfect system of controls.

This memoir is well worth reading, and the author is to be congratulated on a fine piece of original work, the results of which should be of considerable service to the medical authorities in the maintenance of field hospitals in an efficient condition. The effects of a number of the drugs investigated are given in a series of graphic records at the end of the memoir. The general conclusions arrived at are that some drugs lose considerably their physiological action when kept for a time in tablet form, whilst others seem to retain their active properties.

Report of the Medical Commission for the Investigation of Acute Respiratory Diseases of the Department of Health of the City of New York. Part I. Studies on the Pneumococcus

THIS volume is published as a reprint from "The Journal of Experimental Medicine" and consists of a series of papers giving the investigations carried out on the pneumococcus, which for years has been the cause of a constantly increasing death-rate.

The work was inaugurated in the hope that some means could be devised for reducing the excessive morbidity and mortality from this cause. Succinctly stated, the situation is this. During the last twenty years the general death-rate has fallen 25 per cent, but the mortality from acute respiratory diseases (10 per cent—15 per cent), cancer, diseases of the heart and kidneys all show an increase.

A consideration of the etiology of the acute respiratory diseases brings out very strongly the sanitary importance of the problem—there being no question that the exciting cause in all cases is a micro-organism. Infection must, therefore, be the result of communication, directly or indirectly, from one human being to another. The conclusion seems justifiable that these diseases are essentially communicable, and however great the inherent difficulties of the problem may be, theoretically, at least, they should be to a great extent preventable. As a result of these interesting studies on the pneumococcus, we may look forward to the compulsory notification of cases of acute respiratory diseases at no distant date.

Tumours of the Jaws—By CHARLES LOCKE SCUDDER, M.D., Surgeon to the Massachusetts General Hospital. Lecturer on Surgery at Harvard Medical School. Octavo of 391 pages with 353 illustrations, 6 in colour. 25s net. W. B. Saunders Company, Philadelphia and London.

THE first chapter of this book deals with epulis of which two types are described, *i.e.*, the fibrous and giant-celled. The treatment recommended as being the safest is to extract the

tooth on either side of the growth and then remove the alveolar border from which the growth springs, this procedure in some cases appears to be unnecessarily severe.

Sarcomata comprise the second chapter, which is a lengthy one. The varieties are discussed and the symptoms when either the upper or lower jaws are attacked. Much attention is paid to the earliest symptoms, in fact, this may be said to be a striking point in the descriptions of all the varieties of growth and is therefore correspondingly valuable to the student.

There are numerous case histories and the question of partial *versus* complete operation is discussed with the further history of groups of cases from many clinics.

Benign tumours are described in the third chapter.

The chapter on odontomata is perhaps the best in the book. The embryological classification is followed. The chapter is prefaced by an account of the normal development of the teeth which should be distinctly useful in making the student understand the manner of origin of these growths. Further chapters are concerned with carcinoma of the jaws and the diagnosis and operative treatment of malignant disease of these parts, apparently carcinoma of the lower jaw is much less frequent in America than in this country.

As regards operative treatment, preliminary cleansing of the mouth and nose is insisted upon and the patient is taught to pass the stomach tube for himself several days before the operation and this method of feeding is practised for a week afterwards. Ether is advised as an anæsthetic, to be administered by naso-pharyngeal tubage with a gauze tampon in the pharynx. There is a good section on the control of hæmorrhage, temporary compression of either the common or external carotid is considered the method of choice. The remainder of the technique presents nothing new. The few remaining chapters discuss the anatomy of the accessory sinuses, tumours of the palate, leontiasis ossea and prosthesis and are well worth reading.

There are many good illustrations and the book may be considered an excellent one.

PRESIDENTIAL ADDRESS, DELIVERED AT THE THIRD MEETING OF THE GENERAL MALARIA COMMITTEE HELD AT MADRAS ON THE 18TH NOVEMBER 1912

BY THE HON'BLE SIR PARDEY LUKIS, KCSI,

M.D., F.R.C.S.,

SURGEON GENERAL,

Director General, Indian Medical Service

GENTLEMEN,—In welcoming you to this our third conference, I am pleased to be able to report that during the past twelve months satisfactory progress has been made towards that unification of aim in our anti malarial policy and the training of practical workers upon which I laid such stress in my speech at Bombay last

November. This aim has been kept firmly in view throughout the operations of the year, and our present policy, which, without interfering in details, has for its goal practical anti malarial work, is largely the outcome of the deliberations of your Central Scientific Committee and of the Scientific Advisory Board which has been constituted under the auspices of the Indian Research Fund. And here I wish to acknowledge our deep indebtedness to our Chairman, Sir Harcourt Butler, for all he has done to advance the cause of practical sanitation, and to express our warm appreciation of the cordial co-operation of Sir Ronald Ross who has honoured us by consenting to act as a Consulting Member of the Advisory Board. As regards increasing our staff of practical workers I may note that our organisation has been materially strengthened by the appointment of special malarial officers in Madras, Bengal, the United Provinces, the Central Provinces, the Punjab and Burma. We have also modified the system of malarial classes so as to make them more practical, at the same time altering the composition of the class and increasing its numbers. In 1910, 24 officers and subordinates were trained and in 1911, only 18, all from the civil side. During 1912, however, we trained 57 candidates of whom 27 were in civil and 30 in military employ, and we are now prepared to admit 16 military and 16 civil officers to each of the two classes or a total of 64 per annum. Thus we are not only co-operating with the sister service by providing the military authorities with trained workers for regimental and cautionment purposes, but we are preparing young Indian Medical Service officers, whilst they are still in military employ, for anti malarial work in their districts should they later on become Civil Surgeons. We regard this as of great importance for we find that Civil Surgeons experience great difficulty in obtaining the necessary leave to attend these classes. In conformity too with the practical aspect of our policy we have arranged that the class now under training should meet at Delhi where Captain Hodgson, who is acting for Major Christophers, in charge of the Malarial Bureau, is conducting a detailed malarial survey of the Imperial Enclave. Thus his pupils will have actually participated in a malarial survey and will be fully equipped for carrying on similar work in their own districts later on. There is only one point on which I regret I am unable to report progress and that is as regards our publication "*Paludism*." I am sorry that last year's appeal has fallen upon deaf ears. We have received very little support in the way of contributions and we are seriously considering the advisability of substituting for "*Paludism*" a Journal of Indian Research with special sections for Malaria, Medical Entomology, Protozoology, etc. Such a journal would, we think, serve a useful purpose and in it we could publish many of the shorter papers which are not of sufficient length to justify publication as separate "*Scientific Memoirs*."

YELLOW FEVER

Regarding yellow fever which as a mosquito borne disease forms one of the subjects for our consideration, you have all of you heard of the preventive measures that have been taken by Government and of the progress made in the "*stegomyia*" survey as recommended in the sixth resolution of last year's conference. The object of this survey appears to have been misunderstood in certain quarters, and one paper asks what is the use of a survey of a mosquito which is already known to exist in abundance all along our coasts. The writer has, however, overlooked the fact that although we know that this mosquito exists in large numbers, we have no exact information as to its actual breeding places, habits, etc. The observations of Boyce in the West Indies and of Howlett in this country show that at any rate in towns the extermination of the "*stegomyia*" or its reduction to non-dangerous numbers is theoretically possible, and our present object is to prove whether this extermination is really practicable. So far

the preliminary reports are very encouraging. For instance, the survey at Rangoon shows that *Stegomyia Fasciata* is essentially a domestic mosquito and that it breeds in small collections of stagnant water such as bottles, tins, saucers, under the legs of cupboards or meat safes, etc., within house limits so that its extermination is largely a question of house sanitation and not one involving extensive drainage operations. One of the most important duties of the Scientific Advisory Board, after allotting money for these *stegomyia* surveys, was to advise Government as regards the distribution of the sum of five lakhs which had been placed at the disposal of the Research Fund for anti-malarial purposes. The principle which guided us was as far as possible to recommend expenditure only on schemes which preliminary investigation had shown to be likely to accomplish definite results. Under this head come the grant in aid of Rs. 50,000 to Bombay for carrying out the anti-malarial operations proposed by Bentley in Bombay City, and the sum of Rs. 1,80,000 for the United Provinces for anti-malarial measures in Saharanpur, Nagina and Kosi, where careful malarial surveys by Robertson and Graham have shown that mitigation of malaria in these towns is perfectly feasible at no prohibitive cost. Certain sums have also been allotted for preliminary investigations in Sind and Ennore.

ANTI-MALARIAL MEASURES

The uselessness of spending money on anti-malarial measures without preliminary investigations was forcibly brought home to me in the course of my recent tour. In a certain town which shall be nameless but which had been suffering severely from malaria, I found the municipal authorities expending considerable sums of money in filling up all the pools and tanks which contained dirty or evil smelling water, whilst those which contained clear water and which were of course the only ones in which dangerous anophelines would breed, were left severely alone. This I need hardly point out was not only a sheer waste of money, but if the mistake had not been pointed out, the failure of the project would have been used later on as an argument to show the uselessness of anti-malarial operations.

All the schemes I have mentioned so far are for anti-malarial work in towns, but you must not imagine that the very important question of malaria in rural areas has been neglected, on the contrary, it has our most earnest attention, and in this connection I must allude to the most excellent work done by Stewart and Proctor in Lower Bengal. They have shown that a close connection exists between over-vegetation and intensity of malaria—in which respect they are in close agreement with the findings of Watson in Malaya. At the suggestion of the Government of India, the Government of Bengal has taken up the matter and it is proposed to allot a considerable sum of money to carrying out an extensive experiment of jungle clearing in the neighbourhood of inhabited areas. Should this experiment prove successful, we shall have at our disposal one method at least of improving the conditions obtaining in small villages, specially those in the deltaic area. But although this method is likely to be useful in flat country, it is doubtful whether it will avail in hilly tracts intersected by ravines. Watson has found it useless in Malaya, and Kenrick has arrived at similar conclusions in the Central Provinces. Major Periy too, in his paper which is for discussion at this conference, goes carefully into the practical question of jungle-clearing in the hilly tracts of this Presidency and shows that, whereas on the 3,000 feet plateau jungle clearing produces little obvious effect, on the 2,000 feet plateau the conditions are different and the proper clearing of jungle gives hope of the practical eradication of malaria.

There are many other ways in which we may deal with malaria in rural areas. First and foremost amongst these I would mention what has been aptly termed

"water tidiness," that is, the filling up or draining of all pools which might be potential mosquito-breeding grounds and the clearing of the edges of all tanks for at least half a mile round each village, so as to deprive the mosquito larvæ of the protection afforded by weeds against their natural enemies.

The next most important step is the stocking of pools and tanks with mosquito destroyers if these be absent. This need not be an expensive or troublesome task. I am not suggesting the importation of the much vaunted "millions" from Barbadoes, and I am aware of the fact that during the past few years considerable sums of money have been wasted by the importation of fish into localities where they were either already abundant or to which they were unsuited. But all this may be avoided if those interested in the subject will purchase the pamphlet on the "Indian Fish of proved utility as mosquito destroyers," by Captain Sewell and Mr. Chaudhuri, which is published by the Superintendent of the Indian Museum at the nominal price of 8 annas. From a perusal of this pamphlet we learn that the species most useful in mosquito reduction are those belonging to the four genera—*Haplochilus*, *Ambassis*, *Trichogaster* and *Nuria*, and more specially to the various forms of the first mentioned, whilst discredit is thrown on *Anabas Scandens*, "the climbing perch," which apparently only feeds on mosquito larvæ when in captivity. I would also direct your attention to the virtues of the water snail, "*Limnæa stagnalis*," which according to McCabe is a voracious devourer of mosquito eggs, and to the interesting paper by Mr. Wilson on "Larvicides and the natural enemies of mosquitoes in Southern India."

PURE WATER SUPPLY

Lastly I would mention the provision of a pure water supply. We all of us know that when from any cause the health of the host is depressed, the malarial parasites increase in number and that the reverse occurs when from any cause the health of the host improves. The improvement of the general health of the individual therefore, by enabling him to develop the resistant power which will ultimately free him from the disease, is an important feature of our anti-malarial campaign, and for this reason we regard the provision of a pure water supply in rural areas as an anti-malarial measure of vital importance, and the Scientific Advisory Board believe that if with this be combined systematic jungle clearing, water-tidiness, the preservation of mosquito destroyers and the distribution of quinine, it may be possible to achieve wonderful results even in areas where the physical conditions render drainage schemes, etc., practically impossible. For this reason I have noted with great pleasure the formation at Jessore, on the 12th of December last, of a Coronation Anti-malarial Society which apparently intends to work in villages on lines very similar to those indicated above. You will all, I am sure, unite with me in wishing this society every success and in congratulating Rai Jadunath Mazoomdar Bahadur upon its inception. I trust that it marks the beginning of that co-operation of the public, upon the necessity for which I have insisted so frequently, and without which we can never hope to achieve a victory in our campaign against malaria.

QUININE

And now I wish to say a few words with reference to the use of quinine which formed the subject of our second resolution at last year's conference. During the past twelve months quinine prophylaxis has been subjected to severe criticism by many observers who have pointed out that even when persons are taking large doses of that drug, more than 25 per cent of them show malarial parasites in their peripheral blood. It has been suggested in certain quarters that in India

this is due to the fact that the Government quinine is inferior to that supplied by European firms, either as a result of defective manufacture or deterioration from storage in a hot climate. This suggestion which is without foundation in fact, it is my duty to refute. In 1910 our white quinine, both of Bengal and Madras manufacture, was subjected to independent analysis in Amsterdam and it was proved to be in every respect of the same chemical composition and purity as the best English quinine. If further confirmation is required, I refer you to Captain Maclean's criticism of quinine prophylaxis which appeared in the R A M C Journal for November 1911, where you will find that after submitting for analysis sealed samples of Government quinine taken from Delhi, Muttra and Agra, the writer is bound to acknowledge that not only did the men get quinine but they got quinine of excellent quality. The other suggestion was that our quinine had undergone certain molecular changes resulting in the production of inert quimeretin. The Government Quinologist whom I consulted on this point tells me that solid quinine sulphate is not changed at all by any temperature short of that of boiling water and that the most intense light only alters it superficially. It is not known to be affected by a damp atmosphere and it is only dehydrated in a dry one. Quimeretin is the name given to an undefined brown product of the action of sunlight on an aqueous solution of quinine, and it is possible that the yellow coloration formed on the surface of solid quinine after prolonged exposure to light may be due to a similar change. But the amount so formed even after the most drastic treatment is infinitesimal and can have no appreciable effect upon the therapeutic value of the drug. I may note more over that Watson in Malaya using quinine of English manufacture, has had similar experience and I would call your attention to a note by Captain Ryley in a recent number of the R A M C Journal in which he describes an experiment made in Hongkong with two Companies of the Middlesex Regiment. The men in one Company were given daily doses of 5 grains of quinine, whilst the second Company received none at all. The result of the experiment was that 47 per cent of the men in the first Company showed parasites in their blood and 49 per cent in the second. That this failure was not due to any deterioration or staleness in the quinine used was proved by the fact that in therapeutic doses the same stock solution speedily removed the parasites from the blood of patients in hospital. If therefore, gentlemen, you have failures in quinine prophylaxis, it must be the method which is at fault and not the drug itself.

That the method itself is at fault is, I think, clearly shown by Thomson in an article in the July number of the *Annals of Tropical Medicine and Parasitology*. In his opinion the faults of the five grains daily method are—

- (1) This amount is insufficient to prevent infection from mosquitoes
- (2) It is an insufficient amount to render the blood uninhabitable by the parasite and hence it takes a long time to eradicate malaria from the system or it may even fail altogether especially if there are many crescents
- (3) This amount makes the blood less suitable for the parasites and hence tends to keep the disease latent in the system without curing it

These three postulates seem to me to offer a very reasonable explanation of the failure of quinine prophylaxis and to render unnecessary the formulation of any theory as regards the development of a strain of quinine-immune parasites. It is, however, only fair to state that Professor Celli does not admit that quinine prophylaxis is a failure. On the contrary, in his recent report which has been translated into English by Major Lalor, he predicts a final triumph for this method far greater than that which in his opinion it has attained in Italy. On reading his essay, however,

it is evident that he bases his arguments on a comparison between the effect of the prophylactic use of quinine and those obtained by what in Italy is termed "human vaccination," that is to say, the treatment in the inter epidemic period of all chronic patients suspected to be "reservoirs" of malarial infection. The latter method is not adopted in India and it is obviously doomed to failure seeing that it is these chronic cases that are the most fertile producers of crescents which can only be destroyed by large doses of quinine taken regularly for several weeks. In view therefore of the objections to quinine prophylaxis on the part of the people in this country, I fear we must adhere to the terms of our last resolution and that quinine prophylaxis, so far as the free population is concerned, must be largely restricted to the destruction of the parasites in the blood of those who are suffering from malaria in either its acute or chronic form, especially during the fever season.

BLACKWATER FEVER

From the subject of quinine we naturally pass on to that of the Black Water Fever. As you are aware, there are three hypotheses as to the etiology of the disease

- (1) That it is the result of quinine poisoning
- (2) That it is either a manifestation of an active malarial infection or the result of a condition brought about by a previous infection
- (3) That it is due to some undiscovered specific organism

Notwithstanding the fact that the last mentioned theory is discredited by those who have studied the disease in India and in the Canal Zone, we must not forget that it is not so very long ago that Kala Azar was regarded as a manifestation of merely intense malaria and it is interesting therefore to note that Leishman in examining blood films from a case of Black Water Fever which occurred in Uganda has found in them certain cell inclusions which he suspects may possibly represent an invasion of the endothelial cells of the visceral blood or lymph vessels by parasites of the nature of *Chlamydozoa*. Low reports that he has found similar cell inclusions in the blood of cases of fever from Bineo and Pellagra from Italy, and he suggests that although time alone will show whether Black Water Fever, Pellagra, and some of the undefined Tropical Fevers are due to parasites of the nature of *Chlamydozoa*, further researches into the etiology of diseases with filterable viruses such as Yellow Fever, Dengue, Pappataci fever, etc., in the light of Prowazek's discoveries, might well meet with success. These three diseases seem to form one natural group and there is reason to believe that their pathogenic organisms may be closely allied. The authorities of the Yellow Fever Bureau, therefore, have decided to include in future in their Quarterly Bulletin both Dengue and Pappataci Fever, and to publish later on investigations on these two diseases.

THE MINOR FEVERS

Here in India investigations are particularly necessary to clear up many doubtful points, such for instance as to whether or no the "seven days" fever of Rangoon and Calcutta is identical with Dengue, secondly as to whether or no the "three days" fever of Central and Gilgit is identical with Pappataci fever, and lastly, whether Dengue, "seven days" fever, and "three days" fever are distinct diseases, or whether, as Megaw suggests, they are different forms of one and the same disease. Then, too, there is the question of the insect carrier. Dengue is said to be carried by *Culex fatigans* and Pappataci fever by *Phlebotomus pappataci*. But many epidemics of "three days" fever have occurred in stations where no *Phlebotomus* could be found. On the other hand, *Phlebotomus* have been regarded as the carriers in certain epidemics of "seven day" fever, as in the Cavalry Lines at Secunderabad, and finally Lalor has given it as his opinion that the carrier of the

"seven day" fever in Rangoon is probably *Stegomyia fasciata*

THE LEISHMANIA INFECTIONS

Time will not permit of my dealing with the important subject of the diseases of the "Leishmania" group. Neither do I wish to anticipate the discussions on the interesting papers that will be presented to you. There are two points, however, in connection with Colonel Donovan's valuable paper on Kala Azar upon which I wish to lay particular stress. The first is in connection with his view that one method of infection may be by the mouth, in support of which theory he instances the frequency of intestinal lesions in this disease. This view is in accord with the observations made some years ago by Bentley in Assam to the effect that if one person in a hut is attacked by Kala Azar it does not as a rule spread to the other inmates unless the first sufferer develops dysenteric symptoms. It seems therefore eminently desirable that, whilst continuing our laboratory experiments, further field investigations should be undertaken in Assam, where the conditions for the spread of this disease appear to be peculiarly favourable. The second is in connection with Colonel Donovan's successful attempt at infecting a dog with the disease. The *post mortem* examination showed extensive infection of the bone marrow whilst the liver and spleen were apparently healthy. This renders it necessary that we should reconsider our position as regards the insusceptibility of Indian dogs. So far as I am aware, no examination of the bone marrow has been made in previous cases. If I am correct in this supposition, it is obvious that a further series of observations will be necessary before we can say with confidence that the Indian dog is immune to "Leishmania Donovanii."

THE SPIROCHÆTAL INFECTIONS

Lastly, there is the question of the Spirochætosos. We have known for some time that small outbreaks of relapsing fever occur frequently in the jails of the Meerut district—they are not serious and there are reasons for believing that the disease which is probably endemic in the villages of the Jumna Kadir is frequently unrecognised and treated as malaria. This spring the death rate was noticed to be rising in the Meerut district and it was presumed to be due to Plague. The villagers, however, refused to recognise it as such chiefly on account of the comparatively low mortality, so certain medical officers were detailed to visit the villages and take blood films. These on examination showed numerous typical Spirochæte, and subsequent investigation has shown that some 70 villages are infected with this disease. These villages will, we think, form an excellent starting point for the enquiry, which it is proposed to institute next year, into the etiology of Relapsing Fever, especially with a view to settling the question of the "carrier" of the disease and the exact mode of transmission.

Several years ago Mackie showed that in Bombay the carrier of Relapsing Fever is *Pediculus Vestimentorum*. These observations have now been confirmed by Nicolle, who has gone a step further than Mackie and has investigated the exact mechanism of transmission. According to him the Spirochæte, after ingestion by the louse, undergoes in its digestive tract a series of transformations, finally becoming a "filterable" micro organism, in which form it traverses the intestinal wall and lodges itself in the general body-cavity of the insect, where it again assumes a spirillar form. The *Pediculus* cannot therefore convey the infection by biting. In order that this may occur, it is necessary that the insect be crushed and that the spirilla it contains should come in contact with an abrasion of the skin. This distinctly novel method of transmission, which is not in accord with the views of Mackie and other observers certainly deserves further investigation.

Then, in the October number of the *Indian Medical Gazette*, Browse reports the discovery in Quetta of a

Spirochætal infection which differs in important details from either the Classical Relapsing Fever of Vandyke Carter or the African Tick Fever. The disease is confined to the Regimental Follower's Quarters in which *Cimex* and *Pediculi* are very numerous. Considerable numbers of a Tick, said to be *Oimithodorus Tholozani* and one specimen of *Argas Persicus*, were also found. Notwithstanding the observations of Mackie and Nicolle Browse is inclined to put the first three out of count, and he suggests that this new disease is identical with one which is known in Persia as Miana and which is said to be conveyed by *Argas Persicus*.

I think I have said enough, gentlemen, to show that the Pyrexias of uncertain origin offer a wide field for research, and in conclusion I cannot do better than quote a paragraph from the Presidential Address on the Fevers of India delivered by Crombie some 18 years ago at the first Indian Medical Congress held in India in December 1894. He said "We have allowed a Frenchman to find for us the *Amœba* of our malarial fevers, and a German the comma bacillus of cholera which is surely our own disease. Shall we wait till some one comes to discover for us the secrets of the continued fevers which are our daily study, or shall we be up and doing it for ourselves?"

CONCLUSION

Gentlemen, let us be up and doing. The Central Research Institute at Kasauli, the Bacteriological Laboratory at Parel, the Calcutta School of Tropical Medicine, and, let us hope, ere long the Pathological Institute in this city, will afford our younger brethren every facility for carrying out original investigations, and I can assure you that any well considered scheme for research work will receive the fullest sympathy and assistance both from the Scientific Advisory Body and from the Government of India.

A recent article in the INDIAN MEDICAL GAZETTE has told us what the Indian Medical Service has done for India in the past. Let us now band ourselves together and show the world what the Indian Medical profession as a whole,—whether official or non official, whether European or Indian,—is doing for this country in the present and what we hope to accomplish in the future.

SPECIAL ARTICLE

TROPICAL CLIMATES AND WHITE MEN

THE Board and the Study of Tropical Diseases at Manila has done much good work, and some of the most interesting has been on the effects of a tropical climate such as that of the Philippines on the white man who migrates thither.

It is a complex subject, and the alleged deleterious effects are many and due to either heat, humidity, chemical action of sunlight, lack of exercise, disturbed sleep, improper food, bad water, alcoholic and venereal excesses and more important than all infection by animal and vegetable pathogenic organisms.

In a recent issue of *The Philippine Journal of Science* Major Weston P. Chamberlain of the U. S. Army has a very valuable paper on the effect of complexion on suitability for a tropical climate.

We cannot do better than quote as fully as possible Major Chamberlain's conclusions—

It seems to us by no means proved that the pigmentation of tropical races and the tanning of Caucasians is a protective effort on the part of Nature against the

chemical activity of sunlight. Several other explanations suggest themselves, but will not be discussed here. The integument of the Negro is able to radiate heat more readily than that of a white man, but this advantage is least manifest when most needed, namely in direct sunlight, where the superior radiating power of the black skin is more than counterbalanced by the facility with which the dark colors absorb theinic rays. However, it does seem proven that on the living subject the brown or black skin, when exposed to the sun, is always slightly cooler than the skin of a white man. This apparent anomaly is explained on the ground that the cooling effects produced by evaporation are more marked in the case of the dark races, because of anatomical difference in the skin. Daubler states that the Negro has sweat glands which are larger and better developed than those of the Caucasian. Some claim that the number of glands in a given area is greater. Aron considers that the brown skin is cooled more efficiently because the perspiration is secreted more evenly, the evaporation is complete, and the waste, due to the sweat dripping off, is avoided. The above conditions, taken together with the fact that the working native wears very little clothing place the pigmented native in a better position than the Caucasian as regards the heat regulation of his body in the Tropics.

The advocates of the theory that certain deleterious effects noted in the Tropics are due to the chemical rays of the sunlight, point to sunburn as an evidence of injury produced by actinic rays and maintain that pigmented skin will absorb these harmful waves. The pigmentation following sunburn is considered a conservative effort on the part of the organism. The supporters of the actinic theory advocate the use of protective clothing, a red, orange red, or black layer being recommended. Some advise a tinfoil lining for the headgear. Now it is a matter of general observation that the covered portions of the body do not become tanned or sunburned when ordinary clothing is worn. If sunburn and tanning are due to actinic rays, and if the usual clothing is able to protect the skin from their effects, it seems to us reasonable to assume that the same clothing will protect the body as a whole from the effects of these rays. This argument of course does not take into consideration that quantity of rays which may enter through the face and hands, but no one, as far as we are aware, has recommended covering these parts. Therefore it seems probable on theoretical grounds that ordinary clothing gives sufficient protection, and the result of an extensive practical experiment by the Board supported this view by showing that no benefit resulted from the use of orange red hat linings and underwear.

Recently Aron has shown that monkeys when exposed to the direct rays of the sun in Manila, quickly develop a high temperature and die in one or two hours. Monkeys exposed under similar conditions, while at the same time a strong current of air from an electric fan blew over their bodies, did not suffer any discomfort. Of course the amount of chemical rays falling on the animals was identical in the two cases. The inability of monkeys to stand sun exposure is considered by Aron to be due to the fact that these animals possess no sweat glands, and consequently have only a limited power of thermic regulation. Therefore, hyperpyrexia occurs as a result of the absorption of solar heat rays. No rise of temperature and no ill results occurred when monkeys' heads were exposed for several days while their bodies were protected from the sun. Aron concludes that "hyperthermia alone must be regarded as the true cause of the death and of the injurious effects brought about by the radiation of the sun." While Aron was working at the Bureau of Science in Manila on the thermic factor in the tropical sunlight, Freer and others have been engaged in the investigation of the chemical side of the problem without producing any results which would show that the actinic rays of the spectrum were distinctly detrimental to man.

The researches of Freer and Aron, the results of the orange-red clothing test by Phalen of this Board, the observations of Wickline on blonds and brunettes and our own work on the same subject render it very doubtful in our minds whether chemical rays of the sunlight and complexion types of Caucasians are factors of any importance in tropical pathology.

The experiences of Goigas in Panama, the reports of various other workers from many countries, and our own general observations in the Philippines, all lead us to the conclusion that the main cause of tropical deterioration, as seen in the past, was infection of the skin, blood, intestines, and other regions, with those parasites which are more common in the Tropics than in the temperate zone. The vast improvement in the health conditions in Cuba, Panama, and the Philippines, which has followed action based on such a parasitic theory, is strong evidence in favour of our assumption. The enervating effects of continued heat and humidity doubtless play some part, especially in the direction of discouraging outdoor exercise. Nostalgia, isolation, and monotony, and the excessive use of alcohol resulting therefrom, are factors of considerable importance. To account for what is observed in the Philippines it does not seem to us necessary to call in the hypothetical action of the actinic rays in the sunlight, nor do we think that there is any adequate evidence that such action is a factor in tropical morbidity and deterioration. It appears that the men who spend much time actively engaged out of doors in the Philippines are the ones who remain in the best health. Those who suffer most from nervous affections are the women, and they pass practically all their time in the shade. The situation is well described by Castellani and Chalmers who state that "the basis of the largest proportion of illness and death in the Tropics is bad sanitation and not climatic influences."

The direful effects of the Philippine climate, which have been so vividly depicted by Woodruff relate to the earlier days of the American occupation and are not seen at the present time. It is our belief that these unfortunate occurrences were due chiefly to infectious resulting from the poor hygienic conditions unavoidable in the early campaigns. It does not seem that any effort is now made to spare officers or men from exposure to the sunlight, yet the morbidity and the mortality continually decrease. Affections of the nervous system, including insanity, are among the diseases considered by Woodruff to be particularly likely to occur in the Tropics, as a result of excessive light stimulation, and he bases his argument on statistics from the reports of the Surgeon General covering the calendar years 1901 and 1902.

It is well known that heat and humidity in an experimental chamber, and in the absence of light, can produce symptoms similar to those occurring in milder degree among residents of the Tropics. We think it probable that those two factors, combined with infections, nostalgia, and monotony, account for most if not all of the injurious effects seen in tropical lands. To explain the conditions met with in the Philippines there seems to be no need for invoking the aid of the actinic rays of the solar spectrum. Protection against these rays by orange-red clothing was of no benefit. It is by no means proved that pigmentation *per se* is beneficial in the Tropics. In our investigations of blonds and brunettes the evidence was conflicting, some facts being in favour of the fair and others in favour of the dark complexioned men. This is what would be expected if there were actually no differences between the two types as regards their resistance to tropical influences. From a consideration of all the data it appears that blonds are quite as well able as brunettes to withstand the influences of the Philippine climate for a period of two years and probably for a period of five and one half years. In case of residence beyond the latter period we are not in a position to express an opinion based on any extensive personal observation.

CONCLUSIONS

1 Exact observations continued for a period of one year on large numbers of blonds and brunettes in the military service showed no constant or material differences for the two complexion types

2 The amount of sickness occurring in the Philippines was larger among the blonds in the soldier group and among the brunettes in the Scout-Constabulary Police Group. In the latter group the proportion of men who had never been sick was much larger for the blond type

3 As regards disagreeable symptoms referable to climate, the evidence was conflicting, but on the whole the blonds suffered more than the brunettes

4 Among the soldiers invalided home the brunettes were in much larger proportion than they were in the Philippine forces as a whole

5 In the Scout-Constabulary-Police Group, which had an average of 5.5 years of tropical service, the proportion of blonds as compared with brunettes was probably as high as it ever had been

6 The military conduct of the blonds appeared to be as good as that of the brunettes except perhaps in regard to alcoholism

7 In the United States the relative incidence of isolation was probably slightly higher among the brunettes than it was among the blonds

8. On the whole the blonds seemed fully as able as the brunettes to withstand Philippine service for a period of two years, and probably as able for a period of five or six years

9 The incidence of nervous diseases and insanity in the Army during the last seven years has not been different in the Philippines from what it was in the United States

10 It is doubtful if the actinic component of the sunlight is a factor in tropical morbidity and deterioration

Major Chamberlain in the *Journal* has two other papers on the systolic blood-pressure and the pulse rate of healthy adult males in the Philippines and on the red blood corpuscles and hæmoglobin of healthy adult American males residing in the Philippines from which we quote as follows —

1 The mean blood-pressure in temperate climates for healthy males between 15 and 30 years of age lies between 115 and 122 millimeters of mercury when a 12.5 centimeter armlet is employed

2 When the 12.5 centimeter armlet is used, the blood pressure of American soldiers serving in the Philippines averages 115 millimeters for the period 18 to 30 years of age, and 118 for the period 30 to 40 years

3 This indicates that the blood pressure of Americans residing in the Philippines differs but little if any from the average at home

4 Usually the lowest readings for Americans living in the Philippines were obtained in the first three months of tropical residence, but there was no progressive tendency for the pressure average to rise or to fall with increased length of residence up to a limit of three years beyond which our work did not extend

5 The blood pressure of Americans was lower during the hottest part of the year, but the difference was very slight, only about 3 millimeters

6 There was a well marked tendency for the blood-pressure of Americans to rise with increasing age

7 Neither complexion type nor the use of underwear and hat linings of orange red colour exerted any appreciable influence on the blood pressure of American soldiers

8 There was no well marked tendency for the blood-pressure or pulse rate to rise with increasing height and weight of the individual

9 As was to be expected, exercise raised both the blood-pressure and the pulse rate.

10 Using a 12.5 centimeter armlet the average blood-pressure of Filipinos was found to be 116 millimeters for a large group of males ranging from 15 to 40 years of age and averaging 25 years. This pressure was practically identical with that for the group of white men of the same average age and living in the Philippines

11 There is a well-marked tendency for the blood-pressure of Filipinos to rise with increasing age

12 The pulse-rate of active Filipinos and Americans living in the Philippines averages a few beats above the usual standard of 72 per minute

"From our own work it may be concluded that, after about twenty months of Philippine service, healthy American soldiers, living near sea level and averaging 26 years of age, will show

1 A red cell count averaging 5,200,000 per cubic millimeter, and rarely falling below 4,500,000

2 A hæmoglobin reading averaging 89.6 per cent, and rarely falling below 85 per cent

3 A colour index averaging 0.86 or 0.87

Such a red cell count does not differ from the normal at present recognized for healthy young men in the temperate zone. The hæmoglobin percentage and the colour index are probably a little low, but not sufficiently so to indicate a definite anaemia. The pallor not infrequently met with among apparently healthy persons in the Tropics, we believe to be due as a rule to superficial ischaemia and not to a deficiency in the total quantity, or in any particular constituent, of the blood"

Correspondence

POPULARITY OF THE I M S AND THE R A M C

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR,—With reference to the article in the October Number of the "*Indian Medical Gazette*," reprinted from "*The Hospital*," July 1912, *à propos* of the popularity (or otherwise) of the Services

One cause given for the waning attractiveness of the Indian Medical Service is the influx of Indians. I doubt if this is of much account, as the man who thinks of entering the Indian Medical Service knows usually precious little of India or its inhabitants

I should like to mention two real grievances which might be remedied —

1 Medical charge pay of a regiment, Rs 150 per mensem—up till Lieutenant Colonel's rank

2 Three years probation on entering "Civil Employ"

No 1 As a general rule, every Captain of the Indian Medical Service is a better paid officer than a regimental Captain, but when the I M S officer obtains his "Majority," the boot is on the other leg

Pay of Major I M S grade pay Rs 650 plus charge pay = Total Rs 800

Pay of Major I A grade pay Rs 640 plus "Command" pay Rs 200 = Total Rs 840

It may be urged that not every Major in the Indian Army get "double company" Command pay, but it is considerably more often the case than otherwise

No 2 Why should a Civil Surgeon or other officer in civil employment take three years to prove his fitness or otherwise for such employment? Surely one year is sufficient

Further, all this time he is on the Books of his Regiment, paying a small subscription towards the upkeep of the Mess, and what is still more unfair, keeping his "Officiating" successor out of full charge pay

The obvious remedies that suggest themselves are —

No 1 Amended scale of "charge" pay —

Charge pay of Lieut or Captain	Rs 150	per mensem.
" " Major	Rs 250	" "
" " Lt Colonel, etc	Rs 350	" "

No 2 Officers in Civil Employ to be on probation for one year, after which time their names should be erased from their Regiments, and their successors draw full charge pay

As suggestions for improving the attractiveness of the Indian Medical Service I append the following —

Provision of —

1 Some such system of retiring bonuses as obtains in the R. A. M. C. and R. N.

2 An earlier retiring pension

3 Yearly incremental rises of pay

1 An officer in the R A M C can take £1 000 after 5 years' service in the rank of Captain and there is a rising scale of "bonuses" up to 20 years' service when the first pension is earned

2 I would suggest a pension of £200 after 12 years' service, or even after 12 years' "service in India" This brings the I M S into line with the combatant ranks of the Indian Army who can go after 18 years on £200

3 All Indian Army officers seem to have had a rise of pay recently, except the Indian Medical Service, presumably because the supply of the latter more than equalled the demand The yearly incremental rise of pay would appear to meet the case very well, and especially so, if some system of "retiring bonuses" or an earlier retiring pension, came into vogue

Yours, etc,

H G STILES WEBB,

CAPTAIN, I M S,

Dy Sany Commr, Punjab

(Sub pro tem)

THE LATE DR BUSTEED, I M S

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Early in the present year there died, at the age of 78 Brigade Surgeon Henry Elmsley Busteed, M.D., C.I.F., formerly in the Medical Service of the Honourable East India Company

Those who were in India during the last quarter of the nineteenth century, and all who are interested in the stirring tale of the rise of British power in that country must be sensible of the great debt due to Dr Busteed for the sagacious and indefatigable researches which he conducted into the history of "Old Calcutta," for the light which he threw upon the life and conversation of our countrymen in that city, and for the graphic pictures drawn by his careful pen of one of the most momentous periods in the growth of our Indian Empire, the days of Warren Hastings and Impey, of Francis and Clive and Mademoiselle Grand It is not too much to say that Dr Busteed re-discovered "Old Calcutta" and brought to life again a crowd of interesting figures who once trod that famous stage

It is felt that some memorial of him should be placed in the Premier City of India, which he loved so well, and which owes so much to his inexhaustible knowledge and untiring erudition, and it is thought that not only his personal friends but also many of those who have read with delight his fascinating "Echoes from Old Calcutta" would be glad to contribute to such an object The nature of the Memorial must obviously depend upon the amount of the fund raised for this purpose, but it is hoped that it may be possible to place a bust in the Victoria Memorial Hall in Calcutta which is now in course of erection, and will when completed, be the National Gallery and Valhalla of India

Contributions will be gladly received, in England, either by Sir James Bourdillon, Westlands, Liphook or by Messrs Richardson and Co, 25, Suffolk Street, Pall Mall, and in India by Messrs Grindlay and Co, Calcutta

S C BAYLEY
J A BOURDILLON
HENRY COTTON
A W CROFT
E DENSON ROSS
CURZON of Kedleston
H MORTIMER DURAND
A S LETHBRIDGE,
MACDONNELL

[We have much sympathy with this proposal Dr Busteed died 1st February 1912 Born 4th December 1832 M.D. (Irel) in 1851, entered I M S 4th August 1855, at the first competitive examination, retired 1st June 1886 Served in Mutiny Campaign, relief of Lucknow, Gwalior Operations Joined Madras Mint 1865 and in 1872 Assay Master Calcutta Mint, and remained 16 years in Calcutta till he retired The 1st Edition of *Echoes* was published by Messrs Thacker, Spink & Co, in 1882, the 4th Ed in 1908 —ED, I M S]

CONVICT MARRIAGES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Major Woolley's excellent article on Convict marriages in the Andamans in your March number does not appear to have aroused the comment—favourable or the reverse—which I anticipated and which it deserved It is, however of great interest to all those who have at heart the improvement of the criminal in the present and his disappearance in the future

As he says, it is rather a shock to one conversant with the strict regime of European and Indian prisons to go to Port Blair and find convicts receiving pay from, and being given in marriage by, the Government Major Woolley in his article, has put forward most of the arguments that exist in favour of this marriage system, but the very fact that he feels constrained to suggest improvements shows that he is not satisfied with it I quite agree that if the marriage system is to continue,—and it is now so deeply rooted that its extermination would be a difficult matter, Major Woolley's scheme of married and bachelor villages is a sound attempt to improve it, but I do not think that he has laid sufficient stress on the two great drawbacks to the system

The first drawback is the immorality which prevails and is bound to prevail—in villages where men outnumber the women by 20 to 1 A woman may leave the Female Jail with a full intention of living a moral monogamous life with her new husband, but the temptations are so great that the end is, in a large proportion of cases, a life of prostitution on the woman's part, while the husband lives in idleness on her earnings

The second—and still greater—drawback to my mind, is the condition of the offspring of these marriages

Major Woolley regrets the high percentage of childless marriages I rejoice at it By all means let male and female convicts have the chance of improving their characters by giving them a form of self supported home life but it is terribly hard on the children, and the fewer of them the better

Modern thought seems to be putting less emphasis on heredity and more on environment in the production of health and character, but in this case we have both forces influencing the child and the influence is about as bad as it can be Major Woolley states that the parents are carefully selected, but the fact remains that the majority of them are murderers—the men (may be) dacoits and the women murderers of previous husband or children

If there is any truth at all in heredity (and undoubtedly there is) it is difficult to imagine such persons as likely to produce offspring who will be a credit to society And when the child is born, his environment could not be worse From his earliest years he is surrounded by convicts He learns their ways and becomes an expert at evading the laws in petty matters, as he sees his elders doing A year never passes without some foul crime being the talk of his village and he becomes accustomed to bad language and immoral practices at an age when he should be all youthful innocence These evils would certainly be mitigated by a scheme such as that outlined by Major Woolley

There is just one other point in Major Woolley's article to which I should like to draw attention He says is "venereal diseases are very common among the convicts, it is by no means difficult to understand how it comes about that they prevail pretty extensively among the village population"

This is an indictment against the settlement and especially against the Medical Administration thereof, which ought not to go unnoticed But my two years' experience of Port Blair leaves me little doubt about its truth

And yet if it is possible to exclude plague, smallpox, typhoid, rabies, and the like, (diseases which are non-existent there), it should be possible to exterminate such diseases as Gonorrhoea and Syphilis, and I look forward to the day when efficient Medical Administration (preventive prophylactic, and curative) aided by the whole hearted support of the non medical officials and possibly of the convicts themselves will result in a penal settlement purged of these loathsome diseases, and all the healthier and happier for their absence

I remain, Sir,

Yours faithfully,

F A BARKER, M.B.,

CAPT, I M S

Superintendent, Borsal Central Jail, Lahore

QUERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—A medical man attends a case of opium poisoning—may be suicidal, homicidal or accidental—and the case recovers under his treatment

Is he bound by law to give information to the Police about it?

Of course, in case the patient dies, the medical attendant is bound to inform the police Everybody seems agreed there

M B

November 1912

[Opinion is invited —ED, I M G]

FORMALIN AGAINST FLIES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—From time to time I have seen letters in your columns on the use of Formalin against Flies and I would be glad if some of your readers would give us their experiences.

Recently I was told the best way to use the Formalin was as follows—Take one ounce of Formalin, eight ounces of milk and eight ounces of water, mix expose this mixture in shallow plates. Put a bit of bread with goo, or treacle in centre of the milk formalin mixture. Remember that Formalin is a poison.

Yours etc,
D P H

November 1912

[Will some of our readers give us their experiences—
ED, I M G]

FATAL POISONING FROM CASSIA OCCIDENTALIS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—It would be interesting to publish a case of poisoning which occurred in my practice, by the seeds of *Cassia occidentalis* N O Leguminosae, which cannot be found described in any of the ordinary text books. The plant is known in Bengal as "Kalkrsunda," in the N W P as "Chakau" or "Kalangji," and in Burma as "Ka thaw," and is of very common occurrence in all these provinces. The plant is avoided by all grazing animals, and it is curious, considering how wide its distribution, how seldom poisoning from it is seen.

A Burmese girl, aged about 3 years was found playing with about 2 dozens of the half ripe legumes of the plant, and two hours later, about 2 P M, she was asked by her mother what she had done with the seeds. The girl answered that she had eaten all of them as she felt hungry, and thinking it a harmless affair, her mother did not have recourse to medical treatment. On the same evening the child became very fretful, complained of pain in the abdomen and would not take any food at all. She was persuaded to take a little green tea and she had disturbed sleep all night, and did not have any motion.

The next morning, she vomited some bile, was unable to stand, and was drowsy. The next day, she was found half conscious, rather collapsed, eyes sunken, pupils half dilated, pulse feeble irregular 125 per minute, respiration natural patellar reflex present. Temperature was subnormal, sweating profusely bowels constipated and limbs flabby, though occasionally she would catch at her mother's clothes and take a sip of milk. She had two small motions after a dose of castor oil, and had stimulants as well and in the motion was found broken portions of a legume somewhat digested. In the evening of the same day she was comatose, and was starting now and then with a pitiful cry, her pulse gradually failed, and she died about 8 P M, i.e., 90 hours after taking the seeds.

The symptoms of irritant poisoning were not marked and pointed to cardiac poisoning, rather than anything else, probably acting through the central nervous system.

M L KUNDU, M B (Cal),
Asst Surgeon, Meiktila

THERAPEUTIC &c NOTICES

The Cambridge University Press has published eight new volumes in the "Cambridge Manuals" series. Among them are three which seem of particular interest to Medical men and Biologists. They are (1) *The Psychology of Insanity*, by Dr. Bernard Hart, Lecturer in Psychiatry in the University College Hospital Medical School, (2) *House Flies and how they Spread Disease*, by Dr. C G Hewitt, Entomologist to the Dominion of Canada, and (3) *The Individual in the Animal Kingdom* by Mr. J S Huxley, late Lecturer of Balliol College Oxford.

Dr. Hart attempts to present and explain certain recent developments in abnormal Psychology which have already yielded results of fundamental importance and which seem to offer an exceptionally promising field for further investigations. Prof. Broad's results are largely utilized in the book, and the author shows how the work of that investigator is becoming more and more widely accepted.

The volume on House Flies should be in the hands of every officer of Public Health. It includes not only a description of the habits of the house fly and its life history but shows how it spreads disease and indicates the best methods by means of which it could be exterminated. The author

points out the increased responsibility of municipal authorities in view of recent knowledge concerning this dangerous pest. That the public is as yet largely indifferent does not remove this responsibility.

Mr. Huxley's book is of a more philosophic nature. He attempts to define the term individuality, and after investigating some of its characteristics tries to show in what ways it manifests itself in the Animal Kingdom.

THE Regulon Syndicate Ltd have sent us specimens of Regulon Tablets and Regulon Biscuits which have been strongly recommended as pure and simple vegetable correctives of digestion and as safe and efficacious remedies for constipation. They are tasty and will be found satisfactory for use by children or invalids.

REGULIN BISCUITS

These biscuits provide an excellent method of taking the combination of agar agar with cascara extract. The agar-agar increases the volume of the faeces, and at the same time by attracting moisture renders the bulk softer and more easily acted upon by the peristaltic movements of the bowel. The biscuits, which are flavoured with vanilla, contain a larger amount of regulin than the tablets, and there is certainly nothing suggestive of medicine in their appearance or flavour. The dose recommended for an adult is 4 or 5, for a child 1 or 2.

The exhibit at the recent London Medical Exhibition of Messrs. Bimroughs Wellcome and Co. was a most interesting and in many respects fascinating one, comprising as it did tasteful displays both of the well known staple products of the firm and of the newer preparations synthetic, biological, etc., which are the outcome of the elaborate and painstaking scientific researches constantly being carried on in their laboratories.

The various sera, vaccines and tuberculins prepared at the Wellcome Physiological Research Laboratories and issued by Messrs. Bimroughs Wellcome and Co. formed as usual an important feature of the exhibit. Concentrated Diphtheria Antitoxin 'Wellcome' is a great advance on the older anti diphtheria sera, since it reduces the bulk of the dose by about 60 per cent. The latest 'Wellcome' vaccine is, *Streptococcus Vaccine*, Dental, prepared from several strains of streptococci isolated from cases of *pyorrhea alveolaris* and intended for use in that very common condition. Of special interest in these days of renewed activity in tuberculin therapy is New Tuberculin (W) 'Wellcome,' prepared by a process designed to render it at once more active therapeutically and more easily absorbed than Koch's T R.

Very elegant and attractive are the 'Vaporole' products for inhalation, such as 'Vaporole' Aromatic Ammonia, 'Vaporole' Amyl Nitrite and 'Vaporole' Chloroform and Ethyl Iodide Compound. The last named is a useful combination in all forms of laryngeal spasm. These products in their dainty absorbent coverings only require to be crushed between the fingers to be ready for inhalation.

A full range of 'Tabloid' Hypodermic Cases, Medicine Chests, Bacteriological and Analysis Cases, and 'Tabloid' First Aid was exhibited and demonstrated most strikingly the success with which the art of compression, without reduction of efficiency, is practised by this firm. Equally worthy of notice in this respect are 'Tabloid' Pleated Compressed Bandages and Dressings, a new packing for which was shown which reduces the risk of contamination to a minimum. The bandage unfolds and glides through a slot. It can be used in the same way as a roller bandage with the advantage that every inch is clean and uncontaminated. The latest dressing 'Tabloid' Bismuth Gauze offers a powerfully antiseptic, non toxic and inodorous product well qualified to replace the useful but generally obnoxious iodoform gauze.

Service Notes

GOVERNMENT have decided to add subject d (iii) "organisation, administration and equipment" for the examination for promotion of Lieutenants I M S. It is no doubt highly desirable that young I M S officers should know something of the general organisation of the army.

The officers affected by this new order will be those whose commissions are dated 28th January 1911 and later, and those of an earlier date who will not have completed their departmental examination of 1st January 1914.

In future Lieutenants I M S will be allowed to appeal for their examination on completion of one year's service, instead of 18 months.

In the vacancies caused by the retirements of Lt Col W A Sykes, DSO, IMS, and Lt Col E R Carroll, IMS, the following officers have been advanced to the "selected list"—viz, Lt Col C M Green, FRCS, IMS, Lt Col E A Hall, MB, IMS, and Lt Col G S Thomson, IMS has been put on the selected list with effect from 25th August, *vice* Lt Col B Grayfoot, IMS, promoted

THE services of Capt R Needham, IMS, Health Officer, Simla, were recently lent to the military authorities to help in bringing in the Chinese refugee soldiers from Tibet. This is rather a useful example of the way the civil side of the service acts as a reserve for the military. Capt Needham can talk the Chinese language.

YUNNANESE LANGUAGE—The following corrections will be made to Army Regulations India—

Volume I, paragraph 376, table of rewards

After "Uriya" add "Yunnanese" and in column "Colloquial" insert "1,000 (h)" In the column of remarks add the following note—"(h) Admissible to officers of the Indian Army, continuous service R E officers and officers of the I M S, if in military employ. No officer who has obtained the reward for Chinese is eligible for Yunnanese, and *vice versa*."

Volume II, Appendix V To note IV add the following—
"The above officers may also be examined in colloquial Yunnanese in Burma, by the adviser on Chinese Affairs, under the orders of the Divisional Commander, but no special facilities will be granted for the purpose."

MEDALS—Durbai 1911—The "Delhi" clasp issued to those Indian Officers and men in possession of the Home Coronation, 1911, medal, and present on duty at Delhi during the late Durbai, should be worn as follows—If the recipient be only in possession of the medal for which the clasp is issued, the height of the clasp will be $\frac{1}{2}$ of an inch from the bottom edge of the letter "L" in "Delhi," to the rim of the medal where the small ring attachment is affixed to the medal. If worn with other medals the clasp will be in the same alignment as the clasp, or first affixed clasp if more than one exists, of the other medal or medals.

THE Government of India has decided that officers of the I M S in the Bacteriological Department are eligible for promotion to the administrative grade.

We should imagine that few had any doubt on this matter, but at any rate it is well to have the point authoritatively decided.

THE death of Lt Col Andrew Duncan, FRCS, IMS (ret'd), is announced.

SURGEON COLONEL WILLIAM EDWARD CATES, Bombay Medical Service, retired, died at Weybridge on 29th July 1912. He was born on 2nd September 1833, took the M R C S in 1855, and entered the I M S as Asst Surgeon on 20th February 1856, becoming Surgeon on 20th February 1868, Surgeon Major on 1st July 1873, Brigade Surgeon when that rank was instituted, on 27th November 1879, and Deputy Surgeon General on 15th September 1887. He held that rank when the title was changed to Surgeon Colonel in 1891, and retired on 16th September 1892. During the Indian Mutiny he served in 1857-58 with the field force in the Ahmadnagar and Khandesh districts, in pursuit of rebel Bhils, and also with the Satpura field force, and in the action of Daba Bauri receiving the Mutiny medal. During the Afghan war in 1879, he served as Senior Medical Officer of the Bombay Brigade, was thanked in General Orders, and received the medal.

SURGEON-LT COLONEL STANLEY LOCKER DOBIE, Madras Medical Service, retired, died on 19th July 1912. He was educated at St. Mary's took the M R C S, the L S A, and the L R O P, Edinburgh in 1872, and entered the I M S as Asst Surgeon on 30th March 1872, becoming Surgeon on 1st July 1873, Surgeon Major on 30th March 1884, and Surgeon Lt Colonel on 30th March 1892, and retired on 6th July 1897. He served in Afghanistan in 1879-80, receiving the medal.

SURGEON MAJOR JOHN FITZGERALD, Madras Medical Service, retired, died on 25th July 1912. He was educated at the Sedwich School, Dublin, took the L R C S I in 1859, and entered the I M S as Asst Surgeon on 27th July 1859, becoming Surgeon on 27th July 1871, and Surgeon Major on 1st July 1873, and retiring on 19th November 1878. The Army List assigns him no war service.

CAPTAIN HAMPTON ATKINSON DARGAN, of the Indian Medical Service died of cellulitis in the General Hospital, Rangoon, on 25th July 1912. He was born on 24th May 1872, and educated at Trinity College Dublin, where he took the B. A. M. B. B. Ch. and B. A. O., in 1900, also the L. M. of

the Rotunda Hospital, and the D P H of the Irish Colleges in 1901. He entered the I M S as Lieutenant on 1st September 1901, becoming Captain on 1st September 1907, and had only recently been appointed to civil employ in Burma. He served in the South African war in 1902 in the operations in Cape Colony and in Orange River Colony, receiving the Queen's medal with two clasps.

MAJOR DUGALD NAIRNE ANDERSON, of the Indian Medical Service, retired on 1st September 1912. He was born on 18th August 1872, educated at Edinburgh University, where he took the M B, C M, in 1896, and entered the I M S as Lieutenant on 27th July 1899, becoming Captain on 27th July 1902, and Major on 27th July 1911. He served in China in 1900, receiving the medal.

COLONEL WILLIAM ALFRED CORKERY, Bombay Medical Service, retired on 25th August 1912. He was born on 7th June 1855, entered the I M S as Surgeon on 2nd April 1881, became Surgeon Major on 2nd April 1893, and Lieut Colonel on 2nd April 1901, was placed on the selected list on 14th July 1906, and became Colonel on 1st January 1909. He served in Burma in 1885-87, receiving the medal with a clasp.

LIEUT.-COLONEL CLARENCE EDWIN LLOYD GILBERT, of the Bengal Medical Service, retired on 21st September 1912. He was born on 22nd June 1862, educated at St. Mary's took the diplomas of M R C S and L K Q C P, in 1886, and entered the I M S as Surgeon on 31st March 1887, becoming Major on 31st March 1899, and Lieut Colonel on 31st March 1907. The whole of his service has been spent in military employment, his last regiment being the 26th Panjabis for the last two years he has been on sick leave. Lt. Colonel Gilbert has a long record of war service, one of the best in the whole I M S, beginning with the North East Frontier of India, 1888, Sikkim, Medal and Clasp, and including Manipul, 1891, Clasp, North West Frontier of India, Isazai, 1892, and Waziristan, 1894-95, Clasp Chitral, 1895, Relief of Chitral, Medal and Clasp, North West Frontier, 1897-98, engagement near Shabkadr on 9th August 1897, operations on the Samana and in the Kurram Valley during August and September 1897, two Clasps, Tirah, 1897-98, operations in the Bazar Valley, 25th to 30th December 1897, Clasp, and winding up with East Africa, 1902 to 1904, operations in Somaliland, Medal with Clasp.

LIEUT COLONEL EDWARD RICHARD WILLIAM CHARLES CARROLL, of the Bengal Medical Service, retired on 25th August 1912. He was born on 13th April 1859, educated at Westminster Hospital, took the M R C S and L R C P, London, in 1884, and subsequently the D P H Cambridge in 1893, and entered the I M S as Surgeon on 1st April 1885. He became Surgeon Major on 1st April 1897, Lieutenant Colonel on 1st April 1905, and reached the selected list on 29th March 1910. He served in Burma in 1886-87, in the operations of the Fourth Brigade, and in the Salin Column on the Western Frontier, receiving the Medal with Clasp, most of his service, however, had been passed in civil employment in Assam.

It has been decided that I M S Lieutenants, when attending the month's sanitary course described in Standing Orders, Medical shall also be instructed in field medical organisation and equipment. This is necessary because it is impossible to teach this subject at Millbank or Aldershot, and experience shows that many junior officers are not well acquainted with this most important branch of their duties.

COLONEL H ST C CAPRUTHERS, I M S, Inspector General of Civil Hospitals, Burma, is granted, with effect from the 8th November 1912, combined leave for seven months and twenty two days, viz, privilege leave under Article 260 of the Civil Service Regulations, from the 8th November to the 3rd December 1912, and leave on private affairs under paragraph 226, Army Regulations India Volume II, from the 4th December 1912 to the 29th June 1913.

COLONEL A O EVANS, I M S, officiating Deputy Director, Medical Services, 2nd (Rawalpindi) Division is appointed to officiate as Inspector General of Civil Hospitals, Burma, during the absence on leave of Colonel H St C Capruthers, I M S, or until further orders.

CAPT K S SINGH, I M S, on return from leave, was posted to Amritsar as plague medical officer.

THE Secretary of State has granted Captain H. M. H. Melhuish, I M S, an extension of leave for 4 months.

LIEUTENANT G TATE, Indian Medical Service to be specialist in Midwifery and Diseases of Women and Children 5th (Mhow) Division, with effect from 17th September, 1912.

FIRST Class Military Assistant Surgeon J A F Hailey, Civil Surgeon, Mandla, is deputed to undergo a course of instruction in Malariology at Delhi

THIRD grade Civil Assistant Surgeon Sukumar Sanyal, L M & S, in charge of the Main Dispensary, Mandla, is appointed to officiate as Civil Surgeon, Mandla, during the temporary absence on deputation of Military Assistant Surgeon J A F Hailey

CAPTAIN A CAMERON, I M S, officiating superintendent of the central prison, Benares on being relieved, is placed on special plague duty in the Ballia district

MAJOR R F BAIRD, I M S, civil surgeon, on completion of his training in clinical bacteriology and technique at Kasauli, to Gonda

LIEUT COLONEL J G HULBERT I M S, civil surgeon, on completion of his training in clinical bacteriology and technique at Kasauli, to Muttra

LIEUT COLONEL J M CRAWFORD, I M S, civil surgeon, on completion of his training in clinical bacteriology and technique at Kasauli, to Benares

THE services of Civil Assistant Surgeon Jogesh Chandra Mukharji are placed at the disposal of the Director General, Indian Medical Service, for employment in connection with the cholera enquiry under Major E D W Greig, I M S, with effect from the 4th September 1912 in place of Civil Assistant Surgeon Aglior Nath Ghosh

CAPTAIN R B S SFWELL, I M S, Officiating Professor of Biology, Medical College Calcutta is allowed privilege leave for seventeen days, under article 269 of the Civil Service Regulations, with effect from the 23rd September 1912

THE services of Captain A S Leshe, M B, I M S, Superintendent of the Rangoon Central Jail, are replaced at the disposal of the Government of India in the Home Department

CAPTAIN G HOLROYD, I M S, officiating Superintendent of the Bhagalpur Central Jail was allowed privilege leave for one month, under Article 260 of the Civil Service Regulations, with effect from the date on which he avails himself of it

CAPTAIN M A NICHOLSON, I M S, to be in charge of the Brigade Laboratory at Bannu, with effect from 1st September 1912

THE services of Major G Y C Hunter, I M S, on leave, are placed at the disposal of the Government of Bihar and Orissa, with effect from the 1st April 1912

THE services of Captain A W C Young, M B, I M S, are placed at the disposal of the Chief Commissioner of Delhi for employment as Health Officer of Delhi, with effect from the 1st October 1912

LIEUT COLONEL C MACTAGGART, C I E, I M S, on return from leave, to resume charge of his duties as Inspector General of Prisons, United Provinces

IN supersession of Notification No 3429-II 339, dated the 16th July 1912, Captain V B Nesfield, I M S, officiating Civil Surgeon of Bynor, leave out of India for two months from the 1st August 1912, under article 358 of the Army Regulations, India, volume I

THE HON'BLE LT COL S H HENDERSON, I M S, officiating Inspector General of Prisons, United Provinces, has been granted privilege leave, combined with furlough, for a total period of thirteen months

MAJOR W LAPSLEY, I M S, civil surgeon, on return from leave to Azamgarh

CAPTAIN W T FINLAYSON I M S, Superintendent, Borsal Central Jail, Lahore substantive *pro tempore* is confirmed in that appointment, with effect from the 20th June 1911, *vice* Major C H Bensley, confirmed in the Jail Department of the Central Provinces

CAPTAIN H WATTS, M B, B S, M R C S, L R C P, I M S, Officiating Civil Surgeon, Wardha, is transferred in the same capacity to the Betul District

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Captain H Watts, M B, B S, M R C S, L R C P, I M S, officiating Civil Surgeon,

Betul to the executive and medical charge of the Betul District Jail

MR T W QUINN, L R C P, L R C S, L R C P & S, L M, Civil Surgeon, Betul, is transferred in the same capacity to the Drug District

RAI BAHADUR SURENDRA NATH BARAT, M B, Civil Surgeon, Drug, is transferred in the same capacity to the Wardha District

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Rai Bahadur Surendra Nath Barat, M B, Civil Surgeon, Wardha, to the executive and medical charge of the Wardha District Jail

THE King has approved of the retirement of the following Officers—Lieutenant Colonel C F Feanside, M B, from 10th Sept 1912, Major D N Anderson, from 1st Sept 1912

INDIAN MEDICAL SERVICE—The following Lieutenants are promoted to be Captains, dated 31st July 1912—

Charles Harold Smith, M D, F R C S
Alan MacDonald Dick, M B, F R C S
Thomas John Carey Evans, F R C S
Maurice James Holgate, M B
Trevor Laurence Bomford, M B
Graham Rigby Lynn, M B
Louis Hope Lovat Mackenzie, M B
John McDougall Eckstein
William Andrew Morton Jack, M B
Alexander Charles Anderson
Duncan Gordon Cooper, M B
David Arthur, M B
William Leonard Forsyth, M B
Keshav Sadashiv Thakur
Mohamed Abdul Rahman
Edward Humfrey Vere Hodge, M P
Gerald Tyler Rutke, M B
Herbert Robert Burnett Gibson, M B
Mark Alleyne Nicholson, M B

THE promotion of Major David Claude Kemp, notified in the London Gazette of 17th March 1911, is antedated from the 28th January 1911, to the 28th July 1910

LIEUT COLONEL WILLIAM AINLEY (SYKES, D S O, M B, I M S, Bengal), has been permitted by the Most Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 18th July 1912

MAJOR W R BATTYE, I M S, an Agency Surgeon of the 2nd Class, was deputed to attend the Bacteriological Class at Kasauli to undergo a course of training, with effect from the 4th May 1912

THE services of Lieutenant Colonel B B Grayfoot, M D, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India, with effect from the 10th September 1912

THE services of Captain R D Willcocks, M B, I M S, are placed permanently at the disposal of the Government of Madras

THE services of Captain A J H Russell, M B, I M S, are placed temporarily at the disposal of the Government of Madras

WITH reference to the promotion to the present rank of Major George McPherson, M B, F R C S E, published in Army Department Notification No 118, dated the 11th February 1910, is antedated from the 28th January 1910 to the 28th July 1909

THE services of Captain A W C Young, M B, I M S, are placed at the disposal of the Chief Commissioner of Delhi for employment as Health Officer of Delhi, with effect from the 1st October 1912

THE services of Lieut Colonel W D Sutherland, M D, I M S, are placed temporarily at the disposal of the Government of Bengal for employment on special duty at the Medical College, Calcutta, in connection with the biological blood tests

MAJOR P DEE, I M S, Civil Surgeon Mandalay, is placed in medical charge of the Central Jail, Mandalay, in addition to his own duties in place of Captain P K Tarapore, I M S, proceeding on leave, or until further orders

UNDER article 260, Civil Service Regulations, privilege leave for one month is granted to Captain W F Brayne, I M S, Special Plague Medical Officer, Pegu Division with effect from the date on which he may avail himself of it

MAJOR N P O'GORMAN LALOR, I M S, Deputy Sanitary Commissioner, Burma, who was placed on special duty for a period of one year in connection with the investigation of malaria in this department Notification No 303, dated the 2nd October 1911, will continue to be on that duty for a further period of six months

ON Major C F Weinman, I M S, going on leave, his place as Civil Surgeon of Dinajpur is taken by Mr Asst Surgeon Gleeson, L R O P

ON Lieut Colonel E A Hall, I M S, going on furlough, Lt Col A R S Anderson, I M S, has gone as Civil Surgeon to Dacca

MAJOR E R PARRA, I M S, made over charge of the Dacca Central Jail to Captain F H Salisbury, I M S, on the afternoon of the 21st September 1912.

CAPTAIN H R DUTTON, I M S, made over charge of the Midnapore Central Jail to Major E R Parry, I M S, on the forenoon of the 25th September 1912

IN supersession of all previous orders on the subject, the Government of India have approved of the effective strength of the Sub Assistant Surgeon Branch of the Indian Subordinate Medical Department being revised as shown in the annexure to this order

Details	Bengal es- tablish- ment	Madras es- tablish- ment	Bombay es- tablish- ment	TOTAL
Total Military appointments including reserve	469	95	175	739
Total Civil and Miscellaneous appointments including reserve	116	15	1	132
Grand Total	585	110	176	871

IT is notified for information that all Delhi Durbar 1911 medals from the Army allotment have now been issued, in consequence no further claims or recommendations are to be submitted for the award of Durbar 1911 medals

COLONEL B B GRAYFOOT, I M S, to be Assistant Director of Medical Services, Derajat and Bannu Brigades, with effect from 10th September 1912, vice Colonel D St J D Grant, I M S, transferred

MAJOR T H FOULKES, I M S, was appointed from 1st June 1912 as Dumbai Physician, Mysore

MAJOR W H TUOKER, I M S, was appointed from 20th August as Durbar Physician, Travancore

MAJOR D C LONG, I M S, is due back from 14 months' leave on 31st December

CAPT C A F HINGSTON, I M S, was granted 6½ months' leave up to 8th May 1913

CAPTAIN A S LESLIE, I M S, reported for duty in the Madras Civil Medical Department on 8th October

CAPTAIN J J ROBB, I M S, was granted combined and study leave for one year and 14 days from 12th November 1912

LIEUT R I BINNING, M B, I M S, is promoted to be Captain, dated 31st July 1912

CAPTAIN H A LAFOND, I S M D, has been allowed by His Majesty's Secretary of State for India to return and spend the rest of his leave in India

MAJOR F H G HUTCHINSON, M B, CM (Edin), DPH (Camb), I M S, is granted, from the date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to eighteen months

MAJOR G E STEWART, I M S and Captain A P Hamilton, I M S respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner, Central Registration District, on 1st October 1912 before office hours

CAPTAIN A W HEWITT, I M S, was placed on special duty on being relieved of his officiating appointment as Superintendent, Central Prison, Agra

CAPTAIN H ROSS, I M S chief plague officer United Provinces privilege leave for three months combined with nine months' study leave and twelve months' furlough, with effect from the 7th November 1912, or subsequent date

MAJOR E J O'MPARA, I M S and Major C A Sprawson, I M S, have been appointed Fellows of Allahabad University

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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